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The Journal of the Fire Protection Profession

DECEMBER 11, 1929

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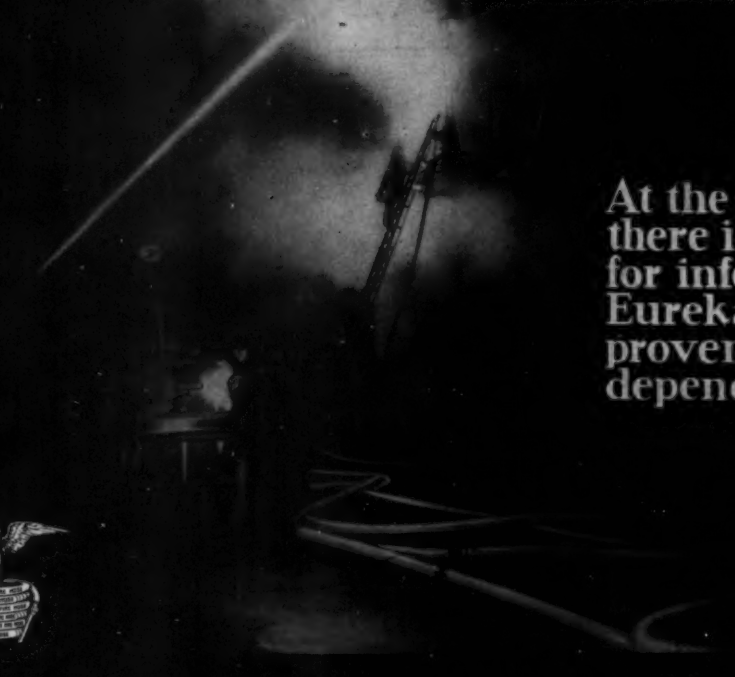

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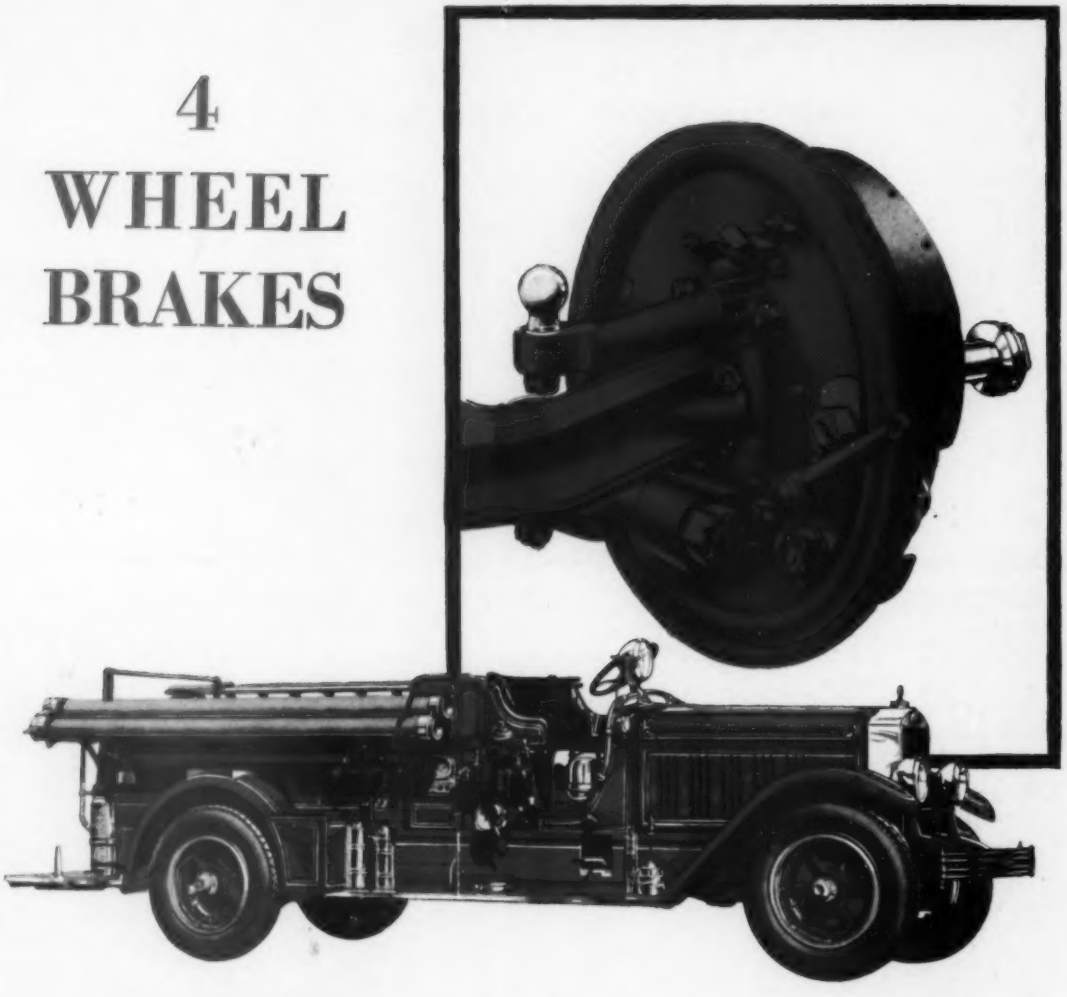

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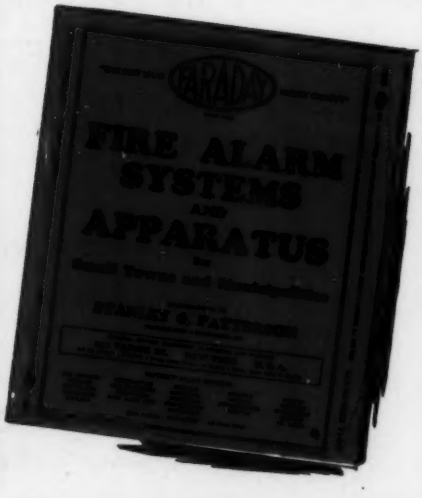

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Published Every Other Wednesday

SUBSCRIPTION PRICE
U. S. and Canada $3 a year; Foreign $4; Single copies 25c

Issued by CASE-SHEPPERD-MANN PUBLISHING CORPORATION
225 West 34th Street, New York City
Also publishers of "Water Works Engineering," Technical Books, etc.

KARL M. MANN
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That is our sincere wish to the readers of

FIRE ENGINEERING

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Contents of this issue copyrighted, 1929, by the Case-Shepperd-Mann Publishing Corp., 225 W. 34th St., New York City.
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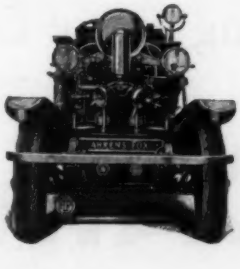

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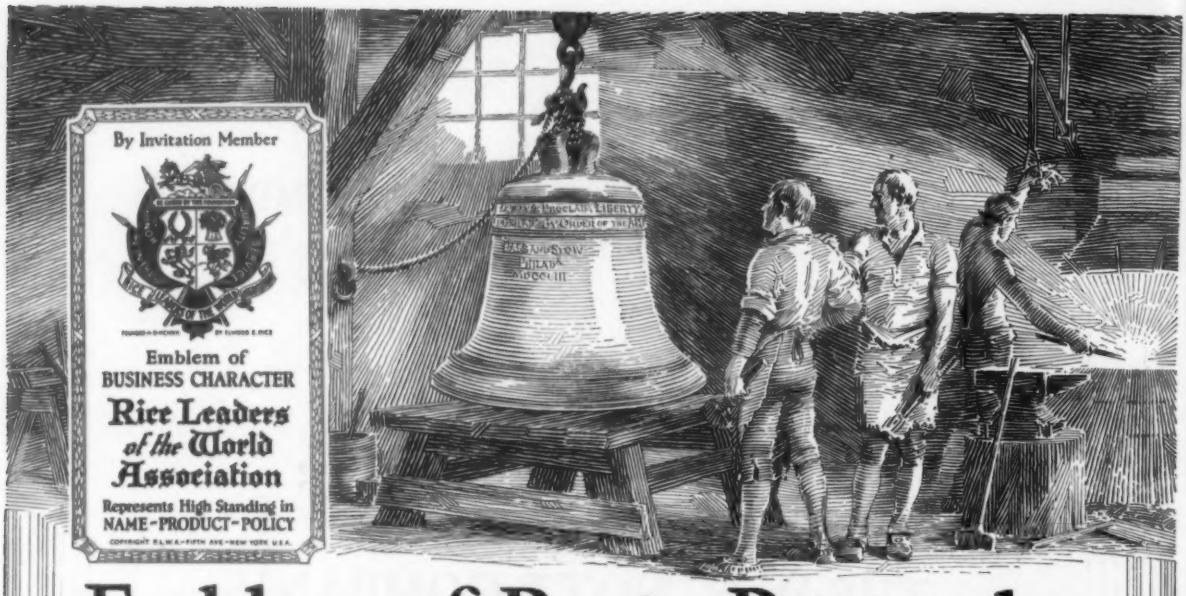

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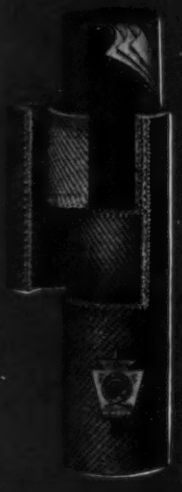

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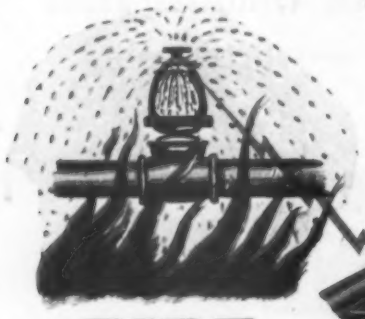

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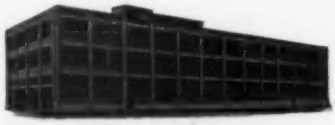

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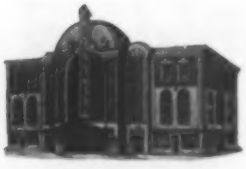

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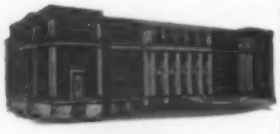

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Fire Chiefs and Superintendents of Fire Alarm in many cities have already recognized the value of such a connection and have recommended it to the business houses, theatres, institutions, factories, stores and other types of sprinkler protected property. Among these cities are:

Fresno, Calif.	Santa Ana, Calif.	Denver, Colo.
Columbus, Ind.	Huntington, Ind.	Maysville, Ky.
Lewiston, Me.	Lawrence, Mass.	Lynn, Mass.
Gardner, Mass.	Binghamton, N. Y.	White Plains, N. Y.
Asheville, N. C.	Burlington, N. C.	Charlotte, N. C.
Cleveland, Ohio	Bethlehem, Pa.	Wichita Falls, Texas
Burlington, Vt.	Newport News, Va.	Norfolk, Va.

In Denver alone, there are 100 or more of these installations, many of which have been in service for as long as ten years.

Insurance interests have also recognized this *Sprinkler Watchman*, and have recommended its installation in various sections of the country; made allowances in rates and in some cases have even allowed factories to dispense with watchmen.

(If you would like a wiring diagram and further details on the *Sprinkler Watchman*, write to our nearest office.)

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(A Consolidation of Fire and Water Engineering and The Fire Engineer)

The Journal of the Fire Protection Profession

VOLUME LXXXII DECEMBER 11, 1929 NUMBER 25

Refrigeration—Hazards and Precautions

The Direct and the Indirect Systems—Effects of Breathing Refrigerant Gases—The Electric Hazard

By CHIEF CHARLES A. McGINLEY, Fire Department, East Orange, N. J.

ONE of the most recent hazards that the Chief of the Fire Department has to deal with, and one that is constantly increasing in volume is that of mechanical refrigeration. Not only are such systems being adapted to manufacturing and commercial usage, but refrigeration for the home is rapidly becoming a general practice. The following paper goes into the subject in an exhaustive and practical manner:

The problem of preserving food collected during seasons of plenty, for use when the source of supply fails, has been practiced by man from even the earliest ages. Among early races, food preservation was essential to avoid famine. In the modern civilized countries, the preservation of food is an important factor in keeping a balance between supply and demand for perishable foods.

Early Types of Refrigeration

Probably the earliest type of refrigeration was used by the Greeks and Romans. This method consisted of placing porous earthenware jars in water, which soaked into or penetrated the walls of the jar. The jars were then taken out of the water and the objects to be cooled were stored in them. They were hung in the air and as the water evaporated, the material on the inside was cooled. This method was practiced especially in localities where the atmosphere was dry.

Another method in use about the same time was the placing of food in natural caves. If there was no cave, a hole was dug in the earth. It was lined with porous stone so as to hold the moisture. The objects to be kept cool were placed inside and the hole was covered to keep out the sun's rays. The objects were kept cool by the natural chill of the earth.

In early Roman history we find that the Emperor Nero had slaves bring snow from high in the mountains to cool his wines. The snow was stored in large air-tight rooms to be opened only when a supply was required. Alexander the Great had trenches dug for the storage of snow. Hundreds of kegs of wine were stored there for cooling.

The Ice Box Comes Into Use

In the early part of the nineteenth century the ice box came into use. Natural ice is placed in the ice compartment. The melting of the ice produces a lowering of the temperature which cools the food stored in the box. This method was a great improvement over previous methods of storing perishable foods. Ice boxes must be properly insulated or else the ice melts quickly and the food placed in the box is not cooled thoroughly. Unless the supply of ice is ample at all times, a uniformly low temperature cannot be maintained.

The natural ice harvest is uncertain. In 1890 there was an unusually large ice shortage. The lakes did not have a sufficiently heavy thickness of ice to harvest. The ice that had been harvested the previous winter had been consumed. Many large companies depending on ice, failed. This shortage hastened the development of mechanical refrigeration so that ice could be obtained at any time of the year.

Mechanical Refrigeration Comparatively New

Mechanical refrigeration is thus relatively new; its principles have been known for many years, but the application for a considerable time was confined to laboratory and school room demonstrations. Forty years ago the industry was not extensive; cooling and refrigeration depended upon the collection and use of natural ice, cut from ponds and streams, and shipped to various parts of the country.

The first extensive use of mechanical refrigeration was in ice plants, and the refrigerant used in these was ammonia. Today the most extensive development is with this refrigerant in large ice plants and cold storage buildings, but other liquids and gases are being brought into use and many types and kinds of machines are being introduced.

Mechanical Refrigeration Processes

Briefly, the most common process of mechanical refrigeration is as follows:

A gas is liquefied by compressing it, during which process heat is generated; this heat is carried off by cooling with water in the larger machines, and by air cooling in some of the smaller ones.

The liquefied gas is conveyed to an evaporator, which is an enlarged section of piping or some special appliance where the pressure is reduced and the gases are allowed to expand; in this expansion, heat is taken up by the gas from the surrounding walls, thus cooling them. The gases pass back to the compressor and the cycle is repeated.

Another but less used system, consists of absorbing a gas in a liquid, through the application of pressure, which

"WITH the exception of carbon dioxide, all other refrigerants have characteristics that are dangerous. They group themselves into two general classes; those that are irritants, toxic or anaesthetical, which means that they are harmful to varying degrees when breathed, and those that are flammable or readily burnable. Some have both characteristics."

sometimes is simply heat applied to a special vessel. When the pressure is reduced and the gas liberated, heat is absorbed from the walls of the container and refrigeration obtained. Beside ammonia, there are several other commonly used refrigerants, as given in the table herewith. Each refrigerant has its special characteristics and has its disadvantages from either the fire hazard or the life hazard. Any of them in too great a concentration will reduce the oxygen content below the point where human life can be sustained. It is well recognized that dilution of air more than 15 to 25 per cent results in smothering a person.

Dangerous Characteristics of Refrigerants

With the exception of carbon dioxide, all other refrigerants have other characteristics that are dangerous. They group themselves into two general classes; those that are irritants, toxic or anaesthetical, which means that they are harmful to varying degrees when breathed, and those that are flammable or readily burnable. Some have both characteristics.

Effect of Breathing Refrigerant Gases

SUBSTANCE	CONCENTRATIONS		
	Killing Quickly %	Very serious effects produced by breathing ½ to 1 hour %	No serious effects even after ½ to 1 hour %
	VOL.	VOL.	VOL.
Carbon Dioxide.....	30	6-8	4-6
Methyl Chloride—			
(Tests of R. & H. Chemical Co.) ...	15-30 EST.	5-10	2-3
Ethyl Chloride	15-30	6-10	2
Hydrocarbons—			
(Butane, etc.) ..	2-3	1-2	.15
Ammonia	2	.35	.03
Sulphur Dioxide ..	2	.04	.005
Chlorine	1	.005	.0004
Chloroform	7	1.4-2	.5

Ammonia, Methyl Chloride and Isobutane

Ammonia is extremely soluble and produces a great amount of heat when brought into contact with water. This is the reason that all firemen dread to come in contact with ammonia when their clothing is drenched with water. Ammonia is used to a small extent at present in household refrigerating machines. It is used by Electrolux.

Methyl chloride has very little odor, what it does have is slightly sweetish, like chloroform. It is somewhat inflammable and when mixed with air is explosive. The explosive range is rather narrow and therefore it is not considered particularly dangerous. Methyl chloride is not readily detectable in small quantities and on this account, there is a great amount of chemical research work being done to obtain something which can be added to it so that its presence in case of a leak may be detected. This refrigerant is used by Servel, Absopure, Copeland, Savage and many other smaller manufacturers.

Isobutane is another refrigerant which is used to a limited extent in household refrigeration. It is not used in larger quantity on account of its inflammable and explosive properties. This refrigerant is used by Copeland.

Woman Killed by Boiler Explosion in Washington, D. C.

A boiler in the basement of a ten-cent store in Washington, D. C., blew up when a safety valve failed to function, and the explosion killed one woman and injured thirty persons who were removed to hospitals while fifty others were less seriously hurt. It has been estimated that there were one hundred persons in the building at the time that the boiler exploded.

General Use of Sulphur Dioxide

The refrigerant in most common use in household systems today is Sulphur Dioxide. It is used in about 85 to 90 per cent of all household refrigeration systems. It is used by the larger manufacturers such as Frigidaire, Kelvinator, and General Electric. Sulphur Dioxide is a chemical that is made by burning ordinary sulphur and compressing the gas to a liquid. It changes to a gas at 14° above zero. It is not inflammable or explosive when mixed with air in any proportion. It has the characteristic odor of burning sulphur. It is soluble to some extent in water and can be cleared out of any place by flushing with water. It is absorbed so slowly that there is no danger of firemen being scalded even when exposed with wet clothing.

In recent years there has been a very rapid and steady introduction of mechanical refrigeration. Numerous manufacturers have developed household refrigerators, office water coolers, ice cream and other containers, soda fountain coolers; beside these there is a growing use of cold storage for all kinds of commodities, for fur storage and in connection with artificial cooling in manufacturing processes and for places where people live, work or play.

For good refrigeration the following temperatures are recommended:

Fruits, vegetables, liquids, canned goods	32-40° F.
Fish	20-35° F.
Meats	20-38° F.
Eggs	32° F.
Butter	18-20° F.
Household use	about 50° F.

The Direct System

This increase in use has resulted in many forms of systems of which there are two general classes, known as the direct and the indirect. As indicated by the name, the first consists of piping the compressed refrigerant to a point where refrigeration or cooling is to be used, while in the indirect system the refrigerant is used to cool a brine or other low freezing solution and this is piped to the point of use. The direct has the disadvantage of having the refrigerant, which as stated before, is nearly always of an irritant or inflammable nature, carried through walls, partitions, etc., from one room to another. The most general system of this kind is the "multiple system," used to supply several apartments or rooms in an apartment house. Others, usually called "commercial" systems, having the same general characteristics of piping the refrigerant from one compressor to several evaporators, are found in stores, restaurants and florists' shops. The principal hazard of such a system is from the probability of leaks. It is for this reason that rules are necessary to assure a first class job of piping, and one that will not be readily injured by workmen and others in the building. Another requirement is the installation of suitable valves to permit the ready cutting off of any section in which leaks occur.

The Indirect Method

The indirect method is objected to by many people mainly from the maintenance standpoint and greater first cost. To cool a given area, it takes twice as much surface with the indirect system as with the direct. Brine pipes corrode readily and must be replaced. The advantages are that the refrigerant can be kept to a part of the building, cut off by suitable partitions or doors from those parts occupied and used by people. Larger installations can thus be used without endangering life and property.

The newness of direct refrigeration has resulted in its hazard being over-emphasized, and the tendency is to restrict or prohibit its use. This in time, will pass away, in much the same way that the hazard of kerosene lamps, natural and commercial gases and electricity are no longer looked upon with the fear which existed when they were first introduced.

Where Direct Refrigeration is Hazardous

There are certain kinds of occupancy where direct refrigeration may be questionable for the next few years, except with systems using carbon dioxide (Co_2). These places are theatres, hospitals, asylums and similar places where people are confined or are in large groups; likewise

(*Continued on page* 1143)

Plenty of Heat and Smoke at Fires in Hay and Grain Storehouses

Overhauling a Heavy Task—Timber Construction Delays Collapse—Some Suggestions in Fighting Fire

ONLY those who have had to operate on a hay and grain warehouse fire can appreciate the extreme rapidity of spread, the intense heat and the dense smoke which accompanies such a blaze.

Baled hay, because it is comparatively light, can be piled to the ceiling, and this condition makes it extremely hard for the department to do effective work in bringing the fire under control promptly.

The average feed warehouse is built of heavy timber and plank construction, sometimes with brick exterior, and sometimes with wood. Large open floor areas are the rule, and open stairways and open hoist shafts are almost invariably present. Because of the nature of the materials handled, floors are apt to be well littered with highly inflammable materials, which require but a spark to set them off.

Baled hay and straw may support concealed fires which cannot be reached by fire streams directed over the top of piles. Sacked grain upon wetting may expand, burst the sacks, and if the sacks are tightly stored between walls, sufficient pressure may be exerted to displace the walls. The same may be said of baled hay and straw, insofar as expension upon absorbing water is concerned.

Most hay and grain warehouses are two stories in height with plank flooring, the second floor being supported by wood beams which in turn are supported at each end by walls and at other points by timber uprights.

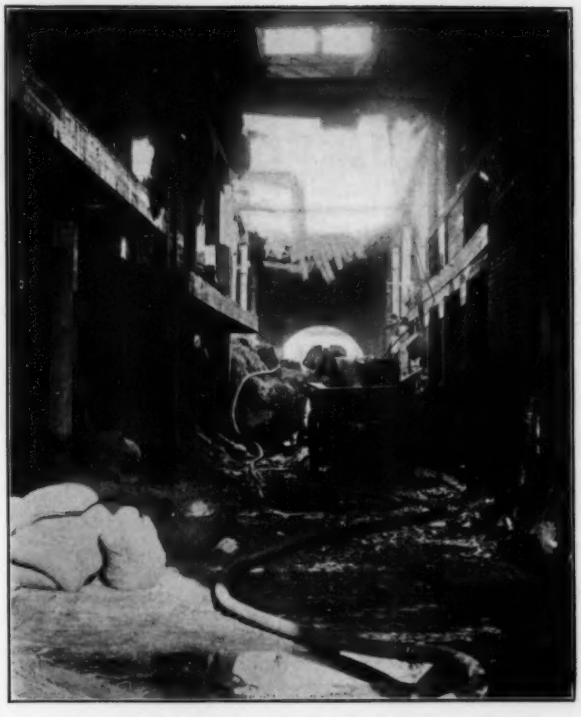
Loads on floors may be extra heavy, or they may be light, depending upon the amount of material on hand at the time the fire occurs. Heavy machinery is not often found around such establishments, although some may employ feed grinders and fanning mills, the former being comparatively heavy.

Feed bins of plank construction are occasionally encountered, some containing thousands of bushels of grain and ground feed. Fire involving such grain and feed throws off dense smoke, making the work of the department very difficult unless the building is thoroughly ventilated. Furthermore, it is often impossible to reach the fire burning within such a bin from the outside of the building, and until the department is enabled to get lines inside of the structure, and open up the bins, little progress con be made in handling this part of the blaze.

While the construction at the average feed warehouse is such as to minimize the danger of collapse in the event of fire, such buildings are occasionally encountered where the floors are loaded to their limit, and it requires but the addition of a few thousand gallons of water or the weakening of one of the supports by fire to bring the floor down. This point must be remembered by the officers in operating at such a fire.

How Fire Starts

The hay and grain warehouse fire may start, as in the case of other fires, from any of a large number of causes.



A Typical Hay and Grain Storehouse

Note the heavy combustible construction, the inflammable contents, the large open areas. These conditions are usually present, and explain the fast travel of fire in establishments of this sort.

One of the commonest, where electrical apparatus is employed, is ignition of dust, chaff, or other combustible materials by sparking electrical equipment. Occasionally defective wiring, or portable appliances, may be charged with starting such fires. Smoking, too, is responsible for many fires in this type of establishment.

In any case, once fire starts, unless it is quickly trodden out, it will spread with astounding speed until the entire structure is ablaze within. Invariably, upon the arrival of the department, such is the situation encountered.

Fighting the Fire

Immediately upon rolling in to a hay and grain warehouse fire, where the building is fully involved, and of comparatively large area, prepare at once to use heavy streams. The volume of heat present will be tremendous and as a result large volumes of water will be necessary to cool the fire off. Furthermore, so fast is the spread of such fires that if the department does not bring the blaze under control within a few minutes, complete destruction of the structure is likely to follow.

If there are large entrances front and rear, or front and side, place deck guns in position to operate through each of these openings. There will be little chance to get inside to do close work until the fire has been at least partly cooled off. While this work is being performed, have men go to the roof at once to open up. Large skylights may be found in buildings of this type and by breaking the glass, if it has not already broken and fallen out, a great deal of good can be done in drawing the smoke and heat upward so as to permit closer operations by the department.

Just as soon as the main body of the fire has been knocked down, hand lines may be stretched to operate from doorways, windows or other points of vantage. Care should be taken when entering the building to make

sure that the men are not endangered by weakened or overloaded floors. If such seems to be the case, operations should be confined at points of safety such as window sills, ladders placed against windows, and neighboring buildings.

While the building may go to destruction very quickly if fire is not brought under control, the process of bringing the fire under control will be found to be a very tedious one, for the fire will persist in breaking out anew until the last trace of it has been extinguished. This is due to fire getting between bales, underneath them, and in bins or other confined spaces which cannot be reached by fire streams during the early operations of the department.

When the main body of the fire has been brought under control, and the finishing touches are being made, it will be necessary to shift bales, bags of grain and feed, and open up concealed spaces to get at the fire.

Just as soon as the men can operate in on the floors where baled hay is stored, bales in the immediate neighborhood, as soon as the fire has been brought into check, should be dumped through windows or doorways to the street. If there are a great number of bales, and if operations are being carried on at the second floor, it will probably save time and effort if the department will break out the sill beneath windows right down to the floor, so that bales can be easily rolled out. No attempt should be made within the building to overhaul bales, for breaking of the wires around them will cause the hay to assume exceedingly large volumes and seriously hinder the operations of the department as well as providing a type of fuel which will burn much faster.

All during the operations care should be exercised so as not to endanger the men by having them work beneath weakened or overloaded floors.

Now Fire Chiefs Are Faced with Sky Hazards

Three homes were set on fire in Westbury, L. I., a short distance from the flying field, when a giant Fokker monoplane built to carry more passengers than any other plane in the United States, crashed during a test flight. At the time of the accident, it carried an engineering inspector for the Department of Commerce and a mechanic. The men were able to jump out of the cabin and on to a roof of one of the houses. The plane damaged the roofs of three homes and then set fire to three other buildings just before it crashed. The lower photograph shows one of the houses that was set on fire by the Fokker while the upper photograph is a close-up of the burning plane designed to carry thirty passengers. Only a mass of twisted metal remained.

WISCONSIN STATE CHIEFS FORM NEW ASSOCIATION

At Milwaukee Meeting Organize New Chiefs' Association—Officers Elected—Hold Two-Day Meeting

A NEW Chiefs' association was formed at a meeting attended by some thirty-five heads of Fire Departments at the Republican Hotel, Milwaukee, Wis., on Tuesday and Wednesday, November 12 and 13. The name chosen was the Wisconsin State Fire Chiefs' Association, and the object as announced is "the uplift and benefit of the state firemen." A special committee, headed by Chief Peter Steinkellner, of the Milwaukee Fire Department, arranged the meeting for the purpose of organizing the new body.

Chief Peter Steinkellner, President

Many important matters connected with the subjects of fire fighting, fire prevention, discipline and methods of Fire Department organization and maintenance were discussed in the two-day convention. A dinner, which is to be an annual feature of the association's conventions, was held on Tuesday evening and proved successful and enjoyable.

The officers elected were as follows:

President — Chief Peter Steinkellner, Milwaukee.
Vice-President — Chief Kuehlthau, West Bend.
Secretary—Chief Arthur Rand, Two Rivers.
Treasurer—Chief James Kuplic, Manitowoc.
Trustees—Chief C. E. Gillen, Racine (for three years); Chief Charles Brandt, Sheboygan (for two years); and Chief Harold E. Kohlmann, Horicon (for one year).

Elmira Fire Alarm Head Dead

Will Y. Ellett, superintendent of the fire alarm system of Elmira, N. Y., died while reclining in a chair at his home. He was seventy-seven years old.

He was dean of the Elmira fire fighters for he began his career more than sixty years ago. Mr. Ellett remained with various companies until the formation of the first paid department. He was active for forty-six years. He was universally known as "Chief" Ellett from his former position of assistant chief of the department prior to his appointment as head of the alarm system.

He started in the department as a torch boy. His job was to run ahead of the firemen who were drawing the apparatus and to keep the men from becoming mired in holes that were then common in unpaved streets.

A few months ago Mr. Ellett witnessed the abandonment of the fire alarm system that was used in 1883. He superintended the installation of the new Gamewell system that is estimated will serve the city for the next twenty-five years.

Chief Espey, head of the fire department, paid a particularly touching and affectionate tribute to the memory of Mr. Ellett.

He said in part:

"I doubt if any person outside his immediate family knew Will Ellett any better than I. Every one of his children, now full grown men and women, I have many times rocked on my lap while Mrs. Ellett and Mrs. Espey went to prayer meeting together."

When Do Courts Hold Cities or Firemen Liable for Injuries Inflicted?

Various Decisions Defining the Law in a Number of Such Cases—Power and Duties of Municipality are of Two-Fold Character

By LEO T. PARKER, Attorney-at-Law

IN all states, excepting Florida, the higher Courts have decided conclusively that municipalities are not liable in damages for injuries negligently effected by officials or employes in the performance of their governmental duties when conducting fire departments.

However, little has been said on the subject of the personal liability of the municipal fire department officials and employes who cause injury or damage, although the law books are full of cases involving various phases of the law on this particular subject.

Also, it is interesting to know that while a municipality is not liable for injuries or damages effected by its fire department officials and employes, who act in a governmental capacity, yet liability does exist under circumstances where an injury is inflicted by means of fire department property utilized in a ministerial capacity.

What Are Governmental Duties

First, it is important to know that the powers and duties of municipal corporations are of twofold character; one regards the state at large; the other is private in so far as they provide the local necessities and conveniences for their own citizens.

In other words, a municipal corporation possesses two kinds of powers; one governmental or public, which is exercised and clothed with sovereignty; the other is private which is exercised as a legal individual. The former are given and used for public purposes; the latter for private purposes. While in the exercise of the former the corporation is a municipal government, and while in the exercise of the latter is a corporate legal individual.

The power to organize and regulate a fire department and otherwise provide for the prevention of and guarding against damage by fire is generally held to be a mere private or individual one. The failure of the authorities to exercise the power to the full extent necessary to protect the citizens from such damage does not render the city liable to an action therefor.

Therefore, it is well settled that municipal corporations have certain powers which are discretionary or governmental in character, and also certain powers which are ministerial. In other words, a municipality will not be held liable in damages for the manner in which it exercises in good faith its governmental powers of a public character, but it is liable for damages caused by its negligence when its duties are ministerial. For instance, a municipal corporation acts in a governmental capacity when it selects a plan for some public improvement, *but as soon as it begins to carry out the plan*, it acts ministerially and is bound to see that the work is done in a safe manner.

A clear distinction between governmental and ministerial duties of a municipality is well illustrated by the following two cases. In one case, Walters vs. City of Carthage, 153 N. W. 881, it was disclosed that a person, who was walking on the sidewalk, was seriously injured when a defective door of a fire engine house fell upon him. He sued the city for damages on the ground that keeping in repair such buildings used by a fire department is not a governmental function. The Court upheld this contention and held the city liable, saying:

"A municipal corporation is performing a ministerial duty in maintaining a fire station and is liable in damages for neglecting to make the same safe."

In the other case M. B. vs. City of Erie, 135 Penn. State 144, it was shown that a person was walking on a sidewalk when the doors of a fire engine house were suddenly and unexpectedly opened to permit the fire truck to be driven therefrom in answer to a fire alarm. The pedestrian was struck and knocked down by the doors which inflicted severe injuries. He sued the city for damage, and it is interesting to observe that the Court promptly held the city not liable, saying:

"It has been held in numerous cases that a municipal corporation is not responsible for the acts of its policemen and firemen. . . . If the door was opened violently and rapidly, as contended by the plaintiff (injured person), it was the result of a push by the person (fireman) who opened it. For his carelessness or negligence, the city, under all the authorities, is not liable."

Municipality Not Liable for Injury Sustained by Fireman

Moreover, this principle of the law is applicable with respect to firemen who are injured while in performance of governmental duties, although the injury results from negligence of a municipal officer.

For illustration, in City of Hattiesburg vs. Geigor, 79 So. 846, it was disclosed that a municipality maintained and operated a fire department within its limits. It had in its employ a Chief of this department, who had supervision and control of the members of the crew employed therein. There was maintained three separate fire stations by the city. Owing to certain repairs which were being made, the fire engines of one of the stations was being temporarily housed under a shed near the city hall. A city fireman while driving his engine from under this shed, was struck on the head and severely injured by a projecting piece of lumber nailed from the ceiling and projecting over the opening of the doors. The fireman sued the city on the grounds that the Chief of the Fire Department was negligent in keeping the engine in this shed and in ordering him to drive it therefrom.

The counsel for the fireman argued that the Chief's negligent act in permitting the board to project into the doorway was not related to conduction of the Fire Department, in the sense of extinguishing fires, and that the city was liable because the Chief's negligent act was not a governmental function. However, the Court refused to hold the city liable since the fireman was performing a governmental function when the accident happened and also because the Chief was employed exclusively to perform governmental duties. This Court said:

"The city in maintaining and operating its fire department was performing governmental functions or duties for which it is not responsible in damages for its negligence or that of its employes. . . . The great weight of authority in this country is that a municipality is not liable for the commission of an illegal act in connection with its governmental functions or duties in the absence of statutory enactment."

Moreover, a municipality is not liable for an injury sustained by a private citizen who enters city property used by a fire department.

For example, in Barnes vs. City of Waco, 262 S. W. 1081, it was disclosed that a physician, who was employed to examine firemen, fell through the wellhole or shoot of an engine house,

"A MUNICIPAL corporation possesses two kinds of powers; one governmental or public, which is exercised and clothed with sovereignty; the other is private, which is exercised as a legal individual. The former are given and used for public purposes; the latter for private purposes."

and was killed. His dependents sued the city for damages, but the Court held the city not liable, saying:

"While a municipal corporation is acting strictly within its governmental character for the general public welfare, it is not liable for the acts of its employes. . . . The fire station was erected to promote purely governmental affairs. . . . The allegations of appellant's petition show that the hole left in the second floor of the fire station was left for the convenience and use of the firemen while acting for the general good of the public. . . . Dr. Barnes was a mere licensee in the building erected by the city for special use of its fire department and it owed him no duty to keep the property in safe condition."

Recognized Governmental Duties

Various Courts have held municipalities not liable for negligent acts causing injuries or damages, under the following circumstances:

Passenger on street car injured as result of fire truck collision (73 Ind. App. 69); person struck by fire hose nozzle (103 S. E. 39); pedestrian struck by fire truck returning from or going to fire (188 N. W. 896); house burning as result of failure of city to provide adequate water supply, fire fighting equipment, etc. (107 S. E. 244), (190 N. W. 110); or failure to inspect fire hydrants (140 N. E. 540).

Law of City Managed Plan of Government

The commission or city manager form of municipal government is said to be founded upon the idea that the administration of the affairs of a great city is more nearly analogous to the conduct of a business than to the government of a sovereign state.

In the state of Florida, for instance, where this form of government is in effect, the higher Court in the case of Kaufman vs. City of Tallahassee, 94 So. 697, held a municipality liable in damages for an injury sustained by a pedestrian as a result of being struck by a fire truck through negligence of its driver.

It is interesting to observe the distinction made by the Court between this form of government and the ordinary form, with respect to its liability for injuries effected by its Fire Department. This Court said:

"The government of the City of Tallahassee is of that character known as the 'commission manager plan' or 'city manager plan.' . . . The growth of municipal governments to the degree of perfection claimed by those who favor the commission plan is upon the theory that a city's functions have become more and more ministerial, in that its duties consist largely, if not entirely, in the management of public utilities such as water works and sewerage systems, electric lighting and power plants, gas plants, telephones, and street railways, all properties, not of the state, but of the people of the community or city, which are managed for the financial advantage and profit of the city. . . . The distinction between what is a governmental and what a ministerial function of a city is not always so clear that a given translation may at once be classed as the one or the other; but, whether governmental or not, it is always quite difficult, if not impossible, to give a satisfactory reason for holding a city immune from liability when through its own negligence or the carelessness or inefficiency of its agents and employes it violates a right of a citizen to his injury."

Personal Liability of Fire Department Officials and Employes

The law is well settled that although a municipality is not ordinarily liable for injuries or damages effected by its officials or employes who act in a governmental capacity, yet the person who negligently causes the injury is personally liable.

For instance, in Florio vs. Mayor and Aldermen of Jersey City, 129 Atl. 470, it was disclosed that a city fireman, while driving a fire truck to a fire, negligently ran the truck against a horse and wagon in which the owners were seated and riding. By reason of the impact both of the latter were injured and damaged. The injured persons brought separate actions for damages, one against the municipality and the other against the driver of the fire truck. It was contended that both the city and the driver should be held liable because the driver was employed by the city and not appointed in the usual manner.

However, it is interesting to observe that although the Court held the fireman personally liable to the injured persons, it refused to hold the municipality responsible, stating the following important law:

"The members of the fire department when acting in the discharge of their duties, are not servants or agents in the employment of the city, for whose conduct the city can be held liable; but they are rather as officers of the city, charged with the performance of a certain public duty or service; and no action will lie against the city for their negligence or improper conduct, while acting in the discharge of their official duty. . . . The servant of the municipality is required to perform his duty in a proper and careful manner, and when he negligently fails to do so, and in the performance of his duty negligently injures another, his officials cloak cannot properly be permitted to shield him against answering for his wrongful act to him who has suffered injuries thereby. . . . It would be a travesty upon both law and justice to hold, that, because of the gravity and importance of the duties cast upon him, he has become clothed with the privilege, while in the act of performing such duties, to thrust aside all ordinary prudence in driving along the public streets to the great hazard of life and limb of men, women and children of all classes and conditions, who may be upon public highways. He must answer for his negligence, though in the performance of a public duty, in the same manner as if he were an individual in private life and had committed a wrong to the injury of another."

Duty of Chief to Restrain Driver

Generally speaking, the fact that a superior officer is present when a subordinate employe negligently causes an injury is not sufficient to result in the personal liability of the former.

For illustration, in Skerry vs. Rich, 117 N. E. 824, a person was injured through carelessness of the driver of a fire automobile who was driving the Fire Chief to a fire. The Court held the driver personally liable in damages, because proof was submitted showing that he was driving at excessive speed and completely lost control of his vehicle.

However, it is interesting to observe that the Court refused to hold the Chief liable, although the injured person contended that the driver was under the Chief's direction and control when the injury occurred. This Court said:

"A public officer undoubtedly is liable for personal acts of misfeasance. But even if Rich was Chief of the department in which Butler (driver) was a subordinate, and both were riding to the fire in an automobile driven by Butler, there is no evidence which would have warranted the jury in finding that Butler when he lost control of the car through excessive speed was acting under the personal direction or orders of his Chief."

On the other hand, it is interesting to observe that in Dowler vs. Johnson, 121 N. W. 487, a higher Court in effect held that a Fire Chief who sits by and permits his driver to drive at a reckless speed, resulting in an injury, may be liable on the theory that his silence indicated approval or consent to the negligent acts.

In this case the higher Court reversed the lower Court which held a fire chief not liable for an injury inflicted a pedestrian as a result of his driver driving 50 miles an hour in a congested section of a city. This Court said:

"If he (Chief) had been out of the car at the time of the accident, no one would suggest that he must answer for the driver's wrong. Even his presence in the car would be insufficient to charge him with liability. . . . The charge is that the car was going at the rate of 50 miles an hour. The charge is that it was going under the defendant's (Chief's) orders. If the defendant (Chief) permitted such a speed to be maintained, and this after reasonable opportunity for protest, a jury might find his silence the equivalent of approval. . . . One cannot let oneself be driven at breakneck speed through city streets, and charge the whole guilt upon the driver, who has done one's tacit bidding."

Must Prove Extent of Damage

Obviously, a municipal Fire Department employe is not personally liable for any damages, unless convincing evidence is introduced showing that his negligence actually resulted in the injury or financial loss forming the basis of the suit.

For example, in the old, but leading case of Walter vs. Meader, 77 N. Y. S. 407, it was disclosed that a property owner, whose dwelling was destroyed by fire sued the fire chief personally for damages contending that he negligently failed to answer the call of assistance.

Testimony was introduced proving that there was a well near the house, but no bucket, chain, or rope; that there was a creek about 200 feet away, but no pails or buckets to carry water in. Also, there were no water mains or other water supply in the vicinity, adapted to the use of the apparatus of the Fire Department. Further testimony proved that the Chief could not have accomplished beneficial results or extinguished the fire had he been present. In view of this evidence, the Court held the Chief not liable, saying:

"If it were conceded that defendant was not merely a servant of the municipality, but was a public officer charged with a duty towards the owners of property in the village, and as such liable to each owner in an action for negligence in the discharge of that duty, still the proofs in this case fall far short of establishing any actionable neglect, or damage resulting from such neglect. . . . It was not proven that there were any hydrants or water mains in that vicinity, or water supply which the fire apparatus was adapted to use."

Ezra Clark, of Newtonville, Mass., Dead—Ezra E. Clark, of Newtonville, Mass., died recently. He was widely known as a specialist in fire pumps and fire protection devices. He had been connected with the Associated Factory Mutual Fire Insurance Company of Boston since 1899 and was formerly designer for the Dean Steam Pump Company, of Holyoke, Mass., and for the E. E. Allis Company, of Milwaukee, Wis.

Relation of Fire Department Equipment and Personnel to Population

Depends to Certain Extent on Character of Construction, Whether Mercantile or Residential, and Density of Population in Area

By GEORGE W. BOOTH, Chief Engineer, National Board of Fire Underwriters

THE determining the exact relation of equipment and personnel of the municipal fire department in relation to population depends upon so many elements that it is a difficult matter to set a hard and fast rule upon the subject. The following paper treats the matter from the general standpoint and arrives at about as approximate a result as it is possible to decide:

George W. Booth

It will be readily understood that no hard and fast rule can be devised for determining the amount and kind of fire department equipment and the number of men required to operate it effectively, in so far as these factors may be dependent upon population. The character of construction, the degree of congestion of buildings, the extent and nature of manufacturing and mercantile development, the water supply available, and possibly other features are all factors in the situation.

Some cities are almost entirely residential in character; others, which serve as the merchantile center for an extensive surrounding district, present a fire protection problem much more difficult than that of the usual city of the same population. A general rule covering the amount of apparatus required, as determined by population, is contained in the National Board of Fire Underwriters' Standard Schedule for Grading Cities and Towns with Reference to their Fire Defenses and Physical Condition. This rule reads in part as follows:

8. APPARATUS REQUIRED FOR ENGINE AND HOSE COMPANIES.—The amount of apparatus in service and regularly responding to alarms should be sufficient to properly protect the city and shall be on the basis of companies required, it being assumed that each engine or hose company will be provided with a hose-carrying vehicle, and that in cities of over 100,000 population one-half the engine companies that should attend any first alarm in high value districts will be provided with a steam or automobile fire engine and a separate hose wagon; other engine companies may have only a combined pump and hose wagon.

Apparatus may be hand, horse or motor drawn. Where 80 per cent. of the apparatus is motorized, the formula for automobile companies may be used.

P=Population in thousands.

For cities under 50,000:

Number of Engine and/or Hose Companies=

1.0+0.14 P. for Horse-drawn.

0.85+0.12 P. for Automobile.

For cities having population of 50,000 to 200,000:

Number of Engine and/or Hose Companies=

4+0.08 P. for Horse-drawn.

3.4+0.07 P. for Automobile.

For cities having population in excess of 200,000, the number of Engine or Hose Companies depends on distribution, as covered by Item 10, and on the ability to handle two simultaneous large fires without leaving all other sections of the city unprotected.

Note: In certain cities a number in excess of the above will be required, depending on the structural conditions found in the city. Where the topography and general layout of the city require, for proper distribution, a greater number of companies than determined by the formula, deficiency will be applied under Item 10.

In cities almost solely residential in character, such as suburbs in metropolitan districts, or where the city has small local high value centers needing less protection than the formula for companies calls for, the estimate will be based on the population corresponding to the fire flow believed necessary, as used in Item 6, Water Supply, except that where such cities have congested shingle-roof frame districts, at least 2 additional companies must be provided to protect the city in case of a second fire.

9. LADDER COMPANIES.—In cities having 5 buildings 3 stories or higher, there shall be one ladder company; in cities over 20,000 population, the number of ladder companies shall equal 1+0.03 P.; for cities of over 200,000 population, the number of companies will depend upon distribution as covered by Item 10. Where no ladder company is required, ladder equipment on other apparatus should be adequate to reach the roof of 2-story buildings; this requires a 24-foot and a roof ladder. An aerial ladder must be provided in a district where 5 buildings are 4 stories or higher and one ladder truck in 5 shall be aerial.

A reserve ladder truck shall be provided for each five or fraction thereof, required; where the number of ladder trucks in service exceeds the number required or ladder trucks are in service in territory where short ladders carried on hose wagons are sufficient, these may be considered as reserve.

10. DISTRIBUTION OF COMPANIES.—In general, distribution shall be such as to provide an Engine or Hose Company and a Ladder Company within the following distance of every point in a district, measured by the most direct route.

District	HORSE-DRAWN		AUTOMOBILE	
	Engine or Hose Co.	Ladder Co.	Engine or Hose Co.	Ladder Co.
Mercantile or Manufacturing	½ mile	⅝ mile	⅝ mile	1 mile
Closely built residential	1 mile	1½ miles	1½ miles	2 miles
Scattered residential	1½ miles	1½ miles	3 miles	3 miles

The above requirements will vary, depending on the topography and character of the city. Hand-drawn apparatus is considered on same basis as horse-drawn, the lack of horses being covered by Item 26.

11 and 12. MAINTENANCE OF COMPANIES.—Strength of Companies shall be maintained as follows:

COMPANIES	Least Number of Men on Duty	
	Day Time	Night Time
Within or near any High Value District:		
Engine Company	7	9
Ladder Company	7	9
Hose Company	5	7
Water Tower Company	1	1
In other Districts:		
Engine Company	5	7
Ladder Company	5	7
Hose Company	3	5

In places of less than 50,000 population, consider as high value hose or engine companies the number necessary for

"UP to a population of about 10,000 the number of companies required is greater in proportion to population than for the larger municipalities. Beyond that size the number of companies and the amount of water required increases almost directly in proportion to the population until that figure reaches 200,000."

first alarm as required in Item 30, regardless of the location of the others. Where an aerial truck is not required (see Item 9), consider ladder companies on 5-man basis, regardless of location.

A hose or ladder company, equipped with one piece of apparatus serving both purposes, and credited under both Items 8 and 9, or as both a hose company and a ladder company under Item 10, requires a minimum strength of 3 men more than a hose company if in a residential section, or 5 men more than a hose company if in a high value district.

Note A. The above strength of engine companies is based upon the use of steam fire engines; one man less may be allowed in companies having automobile pumping engines.

Note B. If drivers do not perform fire duty, the above strength of companies affected must be increased by one.

Note C. Where high pressure fire systems are in use and a man is detailed to remain at the hydrant, strength of hose companies in the district served must be increased by one.

Note D. The minimum above may be decreased by one man, in ladder companies having quick-raising aerial trucks.

Total Capacity of Pumping Equipment

The total capacity of pumping equipment, for cities of less than 200,000 population is inter-related with the fire flow required to be available from the water supply system, the ratio of the total pumping capacity to the fire flow required being approximately as two to three. In cities of over 200,000 population, the number of companies needed is determined rather by distribution as governed by the area, topography, and character of the city.

Prior to the preparation of the Grading Schedule, the Committee on Fire Prevention of the National Board had made inspections and prepared reports on approximately 300 cities of varying sizes; the table of required fire flow as well as the standards for number of companies were fixed upon after a study of conditions in these 300 cities, and the general practice in those cities where fire protection had been developed to a high degree of excellence. In other words, these standards are not technical nor theoretical but constitute a reflection of what has come to be accepted by municipalities as good practice. It is remarkable to note the close agreement between the table of required fire flow and the amount of water actually used during large fires and conflagrations such as those in Baltimore, Augusta and Atlanta, Ga., and Fall River, Mass., where the records of the water department enabled a close estimate to be made of the excess rate of water consumption during these conflagrations.

It is obvious that one company is the least number that must be provided, regardless of the size of the municipality; up to a population of about 10,000 the number of companies required is greater in proportion to population than for the larger municipalities. Beyond that size the number of companies and the amount of water required increases almost directly in proportion to the population until that figure reaches 200,000.

Proper Manning of Fire Companies

Application of the schedule to many cities shows that the largest charges in the fire department are generally inadequate manning. The underlying principle which governs the standards in this respect is that each fire company, whether classed as engine, hose or ladder, shall be provided with sufficient man-power to handle effectively the equipment assigned to it. Charges are based on the minimum number on duty, and are applied for both day and night conditions. Engine companies are required to have at least six men present when stationed in high value districts and four when located in other sections. At night these numbers are increased by two, partly because night fires are apt to gain considerable headway before being discovered, and partly because of the added difficulty of fighting fire in the dark. Ladder companies in high value districts are required to have seven men during the day and nine at night except that if they are equipped with quick-raising aerial trucks, one less is sufficient. Day and night strength may each be decreased by two men in districts not classed as high value.

Winners of the Macon Insurance Association Trophy

Pump Company No. 2 was the winner of the fire efficiency trophy presented by the Macon Insurance Association of Macon, Ga. It is presented each year to the most efficient company in the Macon Fire Department. In the driver's seat is C. M. Newberry and at the rear is H. C. Tucker. Standing from left to right are J. I. Floyd, lieutenant; B. R. Stone, M. A. Meath, chief mechanic of the department; A. F. Devlin, captain; A. L. Hamilton, assistant engineer; H. H. Bright, C. E. Jones and J. J. Bullington.

Night Strength Taken as Basis

The idea that the night strength of companies should be greater than the day strength was fixed upon only after securing the opinion of a considerable number of fire chiefs in the larger cities to the effect that the reasons for this greater night strength were sound. It is difficult, now that most fire departments are organized on the two-platoon system, to arrange for providing a greater strength on one platoon than on the other. In some cities the strength of both platoons is equivalent to that given in the Schedule for the night platoon strength; the extra men of the day platoon are used for making building inspections, for theatre details, and other assignments not strictly in line with fire-fighting duties.

A few years ago one of the largest charges was apt to be based on the lack of fire engine capacity, but recently the development of fire departments has been so rapid, that many cities have eliminated this charge completely. It is assumed that of the total amount of water required for fire protection, one-third will be wasted in various ways and two-thirds will be used by the fire department. Such records as are available indicate that this estimate of the amount of water wasted in various ways is quite close to the actual figures.

Other Causes Which Contribute to Poor Condition

A fire department may be strong in man power and well equipped with apparatus and still not be effective in extinguishing fires. A number of causes may contribute to such a condition. Discipline may be lax; drills and training may be of little value, and the response to alarms may be poorly arranged. Fire methods may not be modern. Unpaved streets, railway crossings at grade, open drawbridges, automobile parking and traffic congestion may retard the response of fire apparatus. Overhead wires, possibly of high potential, may hamper the department. Officers may make no inspections and therefore may not be familiar with the construction and occupancy of the building which is on fire.

Little Dependence to be Placed on Off-Shift

By reason of the increasing cost of operation many municipalities have found it necessary to economize by decreasing the number of companies or the man power assigned to them. When this becomes necessary it is far better in our opinion, to operate a less number of companies, each of them reasonably well manned. than to distribute an equal number of men among so many companies that no one of them is sufficiently well manned to be able to operate effectively. Then by providing a good amount of reserve equipment and making definite arrangements to man it by the off-shift, for serious fires, generally satisfactory service can be obtained. It must be noted, however, that little dependence can be placed on the off-shift in the larger cities. Experience in New York City was such that Chief Kenlon in his annual report for the year 1919, commenting on response of off-shift men at the Greenpoint oil fire, said:

"I have publicly stated on more than one occasion that it would be impossible to round up the off-platoon and get them to the scene of a fire in time to be of any material assistance. That I am right in this contention was clearly demonstrated at the Greenpoint fire in the fall of 1919. A dangerous fire broke out in the plant of the Standard Oil Company in Greenpoint. Five alarms and also a borough-call had been transmitted before the day platoon went off duty. Surely this must be regarded as ample

(*Continued on page* 1144)

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

SALVATION ARMY lassies posted at the busiest corners in the city, and singing Christmas carols, are here to remind us that the Yuletide season is but a few short weeks away. In the department store and retail areas, the number of shoppers have increased to such an extent that the traffic situation has become a serious one.

Within the stores there appears to be somewhat of a pandemonium. In the abnormal condition of catering to the demands of the many more buyers, boxes and wrapping materials are permitted to accumulate for some time before being removed.

In order to bedeck the retail store with the holiday spirit, tinsel and highly combustible material are used for decorations without a thought concerning the fire hazards. Inexperienced electricians are permitted to tamper with power circuits to accommodate the strings of minature lights that are often festooned in windows or near special displays.

All of this brings added problems for the fire chief if he is to follow the present day practice of fighting fires before they start. Added inspections are necessary.

The problem in full that is treated in this issue appears in the box on this page. Elsewhere in this article is the question that will be treated in the next issue. Should you have some comments that you would like to make on the next problem, or if you have a question that you would like to see treated in this department, write to the "Round Table Editor," FIRE ENGINEERING, 225 West 34th St., New York, N. Y.

HERE IS THE PROBLEM

Do you make particular effort by inspection, etc., to prevent fire in stores during the Christmas shopping season?

What particular precautions do you consider necessary?

The Question

Studying the replies that have been received, chiefs are alive to the problems that are ushered in with the Christmas season. Fire prevention regulations are strictly enforced, and in the larger stores, there are firemen regularly on duty, in case of an emergency. Even the smaller municipalities employ special methods. The letters follow:

Victor H. Veit, Chief, Stamford, Conn.: We maintain inspections of business districts, factory districts and also tenement houses throughout the year.

During Fire Prevention Week we cover all districts and try to have everything cleaned up. Fire drills are conducted by the Fire Chief in all public and private schools, and a demonstration is given from a fire alarm box and bell, mounted on a portable frame, of how to correctly send in an alarm.

During the holiday season special inspections are conducted, covering stores, window displays, cellars and back yards. Every effort possible is made to prevent fires at this time. A warning of the dangers prevalent at this season of the year is put in the local newspaper by the Fire Chief.

As to special precautions that we consider, these include: Seeing that window displays are not overcrowded; that electric light bulbs are not used in a dangerous way in decorating; that passageways are kept clean in stores and cellars; that all excelsior and loose papers are kept cleaned up and taken away; that all rubbish is removed from back yards, and finally, that good housekeeping in general is observed.

Jeremiah McGill, Chief, Trenton, N. J.: A special inspection is conducted by the officers and members of the fire department around the holiday season. Every caution is taken to prevent fires in homes which are caused by defective wiring. In many instances cheap wiring is purchased in the 5 and 10 cent stores, which have numerous bulbs attached that create short circuits. Loss of homes and in some cases loss of life can be credited to this cause. Flimsy tinsel and cotton under trees are also dangerous and then there are the deadly candles which certainly are a hazard.

The Board of Education has competent men and women lecturing to children who in turn impart their newly acquired knowledge to their parents. Good results have been obtained through this cooperation.

The same precaution is taken with commercial houses where large window displays of Christmas materials are prominent. Appeals are made not to allow the packing materials to accumulate in the basement, courts, etc. Where large crowds of persons are visiting the stores for the purpose of purchasing materials for the holidays, the management is asked to prohibit smoking.

Electrical experts from the Municipal Electrical Bureau are also detailed to inspect the wiring of the stores, particularly in windows where cords are run with electric bulbs attached. These experts often report irregularities in the electric system and the management is promptly notified and the cause is remedied.

In conclusion I want to say that the fire department is greatly benefited by appeals made from the Board of Commissioners of the city, the Chamber of Commerce, boy scouts, school children, civic lodges, etc. The newspapers are eager to print these appeals and stand ready at all times to aid the fire department.

Henry H. Heitman, Chief, Waterbury, Conn.: We do make an inspection of all stores at this season of the year in order to observe the window displays, etc. We do not allow anything in windows or on display that we consider dangerous, or which may intend to create a fire hazard, such as tinsel or similar materials.

Stores here, at our request and demand, employ firemen of the off-shift for a week or two before Christmas and these men make a tour of the store for the purpose of protecting it against fire. They inspect from the basement to the roof every day for the period mentioned above. This custom has been in vogue here for many years. Cotton is not allowed under any circumstances. All windows must be "dressed" in accordance with the views and ideas of the fire marshal.

J. N. Sullivan, Chief, Utica, N. Y.: Our Fire Prevention Bureau makes a daily inspection of stores in the high value district during the Christmas season and a weekly inspection of all other stores in the city. They insist on the daily removal of all rubbish accumulations.

Special precautions would include the requirement that all articles made of pyroxalin be displayed in glass cases and that that no inflamable films be sold with small

home motion picture projection outfits. Electrical decorations are also closely inspected.

James J. McMillan, Chief, Orange, N. J., Just before the Christmas shoping season begins, an officer who has been in the service for a long period is detailed to this particular work. He is assisted by two officers and twenty-three privates who make inspections, both before and during the Christmas holidays. Their duty is to see that all extinguishers are charged, pails of sand, etc., in their proper places, and that all paper, excelsior and other packing materials are removed from the premises immediately. They also see that floors are kept clean, aisles free from obstructions and that cellars are kept clean, with ample passageway from one end to the other.

It is also up to them to see that shipping departments, where trucks are loaded, are free from all flammable materials and that any delivery cars with leaking carburetors or oil leaks are immediately removed from the premises. Cars are not permitted to park in alleys or driveways. No smoking is permitted.

When the stores are open at night, men are detailed for night duty. We believe this system is worth while. We have not had one serious fire during the Christmas shopping season since the system was put into effect six years ago.

HERE IS THE PROBLEM FOR THE NEXT ISSUE

Is your department operated on the two-platoon basis?

What are the lengths of the shifts?

Which do you consider the better plan: the twenty-four-hour on and twenty-four-hour off arrangement, or day and night shifts?

O. O. Ordway, Chief, Reading, Mass.: I do make close inspections around Christmas time because of the large stocks of an inflammable nature which are on hand in most stores. We are very careful to see that crepe paper decorations are kept high enough so that they cannot be set on fire by smokers.

As we have no ash and rubbish collection in this city, it is up to the merchants themselves to dispose of all rubbish. For this reason we have to be careful that such waste is not allowed to accumulate in the cellars. Some people try to burn rubbish in their heaters. This is dangerous in that if too much rubbish is put in the heater at one time it causes over-heating of the pipes.

In answer to your second question with regard to special precautions, I would say that we are careful to see that circuits are not overloaded; that the temporary wiring for decorations is properly installed and, as mentioned previously, that cellars are kept clear of rubbish.

Perrin G. Trowbridge, Chief, Redlands, Cal.: We increase the inspections in the business section during the Christmas season so that certain classes of business, such as department stores, 5 and 10 cent stores, stationery stores, hardware stores, etc., are inspected weekly. Daily inspection of all alleys is maintained throughout the year by our sanitary inspector who works in conjunction with the Bureau of Fire Prevention. He sees that all rubbish, trash, etc., accumulating on the exterior of the premises is promptly removed.

As to special precautions, the amount and kind of window and other decorations should be limited. Care should be taken to notice special lighting effects being placed on or too near combustible materials. All aisles, doors and stairways should be kept clear. Another precaution to take is to see that all fire appliances and sprinkler shut-offs are not obstructed.

John J. Schwartz, Chief, Kenosha, Wis.: I deem it necessary to take extra precaution during the holiday shopping period. During this season, two weeks, we have firemen detailed to cover the entire business district, particularly in the larger department stores, 5 and 10 cent stores, etc., where there are more or less inflammable materials sold and on display. We pay particular attention to counters in order that they are not overloaded with inflammable material and also allow no smoking in any of these stores during the shopping period. We also make inspections at that time and just before the shopping period to see that the merchants rid their basement premises of all packing materials, paper, boxes, etc. A much greater quantity of such waste materials accumulates during the Christmas shopping season.

At all time during this season there are firemen in the various stores. This is a great help to the merchant in case of fire or panic. The men so assigned also see that the "no smoking" order is enforced. We allow no decorations of any kind to be attached to lighting fixtures, wires, switches, etc. This rule is strictly enforced by the men making inspections.

Louis Locher, Chief, Springfield, Ohio: We are particularly interested in fire prevention through the entire year in all classes of buildings and residences. However, we do take special notice of business establishments where there are many shoppers during this time of the year. One or two firemen and two or three policemen are assigned to these sections.

It is the duty of these men to see that no smoking is permitted in any of these places. The men take note of any accumulation of rubbish which are liable to cause fire and see that they are removed. Hand extinguishers and other fire appliances are inspected and any defects noted are called to the attention of the management. Inflammable materials are not permitted over lights or wiring. Any obstructions in passageways are ordered removed and the men see that exits are properly marked and lighted. If the building is equipped with a sprinkler system, this is inspected in order to be sure that it is in good working order.

J. R. Eldridge, Chief, Johnson City, N. Y.: We have regular monthly inspections of all mercantile and business establishments throughout the entire year. Industrial plants are inspected at least once a week.

During the holiday season all stores are inspected twice each week. These inspections are carried on by firemen who are detailed each day by the captains of their respective companies.

Jos. Fifarek, Chief, Traverse City, Mich.: We start making inspections as soon as the holiday season begins. Stores are inspected and paper and packings are ordered removed as soon as the cases are unpacked. In this way there is no accumulation of rubbish. So far we have received very good cooperation in this respect.

With regard to decorations, we inspect all wiring to be sure that short circuits are not likely to occur. We do not permit paper trimmings to be used on trees. In place of this mica or treated paper is used instead. During the past three years since I have been Chief, we have had no fires from decorations.

E. C. Haskins, Chief, Highland Park, Ill.: During the holiday season newspaper stories regarding prevention of fire are printed. In the business districts all electric equipment, fire extinguishers, etc., are inspected to be sure that there are no defects. The date of such inspection is noted.

I think if it were possible I would detail a uniformed man to each block where merchandise is sold and have hourly inspections made.

Geo. Boughner, Chief, Grand Rapids, Mich.: We do take extra precautions during the Christmas shopping season. Daily inspections are made of all important stores. Ordinances here prohibit any decorations that are not fireproof, and that all decorations be kept away from electric lights.

Our greatest difficulty is keeping rubbish such as straw, excelsior, paper, etc., from behind counters and in packing rooms. Aisles and exits are kept open at all times. Temporary wiring is another menace. While we have an electrical inspector, establishments at times do overload circuits.

Geo. Haggerty, Chief, Berkeley, Cal.: Yes, we do make a special effort to prevent fires in stores throughout the holiday season. All merchants are cautioned regarding the use of flimsy decorations, either of paper or colored cloth. We do not allow such decorations to be used on, or close to lights. Candles are prohibited. Only electric lights are permitted on Christmas trees or throughout stores where displays are set up.

Merchants are also cautioned about allowing packing materials to accumulate. These naturally are more in evidence at the holiday season than at any other time, and a daily removal of same is urged.

(*Continued on page* 1152)

WITH THE EDITOR

A Merry Christmas to All!

As the next issue of FIRE ENGINEERING may not reach some of our readers until after December 25, we take this opportunity to wish all a very merry Christmas, with every joy that goes with this glad season. May your Yuletide be filled with a plenitude of blessings!

Fire Protection Versus Insurance Rates

A small community in the neighborhood of a fairly large middle Eastern city has been considering the feasibility of forming a permanent part-paid fire department. A well-to-do citizen had presented the district with a fire truck, and the plans were being formulated for the employment of a couple of paid men and the erection of a suitable fire station to house the second-hand piece of apparatus. Things were going along swimmingly and all looked favorable for the adoption of adequate fire protection for the little community. Then came the announcement of a change in insurance rates, which meant a substantial saving to the citizens without the added expense of the proposed fire department. So plans for the formation of the new unit were held up and the move for added fire protection apparently was knocked into a cocked hat!

Unfortunately the attitude of this community is typical of the ideas on which many such groups of citizens base their plans for fire protection. That is to say the evaluation of ways and means to protect the community from the dangers of fire are predicated not upon the amount of the funds necessary to guard the dwellings and business places from fire, but on the effect such protection will have upon the insurance rates.

That such a method is based upon a wrong principle need hardly be pointed out. Those that figure their fire protection in terms of fire insurance rate saving forget entirely that they are, by refusing to properly protect their homes and business buildings from fire, automatically increasing the annual fire loss upon which such rates are based. Fire insurance is not paid basically by the insurance companies, but by the policy holders who pay the rates.

Another point forgotten by the members of the community in question and others with the same ideas, is that even though they had received reduction in rates without going to the expense of the part-paid fire department, they might have received an even lower rate had the proposed fire department become a reality.

But the most vital question in this matter of fire protection is overlooked in an attitude such as has just been referred to. Such protection is a community matter and applies to all of the citizens. While doubtless all of the business establishments are protected by insurance, there are bound to be those of the residents who are so situated financially that they cannot afford to pay the insurance rates, which in small places are apt to be high. Such householders are entitled to protection by the community by reason of their paying taxes for this purpose in equal amounts to those who carry protection in the form of insurance. By delaying the formation of a fire department, adequately equipped, a serious injustice is done to such individuals.

The cost of proper and adequate fire protection in the form of a well equipped and well disciplined fire-fighting force is always money well invested, and the returns are to be reckoned not only in dollars and cents but also in the factor of safety involving the lives and property of the citizens of the community.

Parking Violation "Tickets" Without Fines

In a middle Western city a fire station is located in the middle of a block on which it had been the habit of motorists to park their cars and leave them unattended for hours. The consequence was, in case of a fire alarm, the two apparatus housed in the station were badly hampered in getting out of their quarters. It was finally decided to take the bull by the horns and prohibit parking—whether the driver was in the car or not—for over twenty minutes. Signs were posted to this effect, but many autoists apparently do not believe in signs. So on the following Saturday afternoon, the street on this particular block became lined as usual by the parked cars of shoppers and others.

Each of the drivers—on his return to his car, after a longer interval than the twenty minutes allowed—was surprised to find a "ticket" awaiting him. But it turned out that the "tickets" were harmless, and only a lecture and an explanation of the necessity for the enforcement of the regulation was meted out to each of the offending citizens. The plan worked well, however. It is said that the police now have no more difficulty in enforcing the twenty-minute parking ordinance on this particular block, and the fire apparatus is no longer hampered by a crowded street, as the autoists who wish longer parking privileges stop in other streets.

Such a plan as this goes a long way toward impressing the citizens of the importance of obeying parking regulations. Those who had received the "tickets" would tell others of it, and remind them that hereafter a violation of the twenty-minute limit would constitute a real offense and would be treated accordingly. There

is little doubt that such news would travel quickly and that the authorities would have little trouble in enforcing a similar regulation after the adoption of the scheme.

Telling the Public About the Fire Boxes

A youth in a Pennsylvania city discovered a garage fire and ran a mile and a half to the Central Fire Station to notify the department. He was so thoroughly out of breath on his arrival, that he could only gasp: "Fire! Fire!" and the name of the street. The man at the desk sounded the nearest box and the firemen on arrival found that the boy had run past that very box in order to get to the Central Station.

If he had been taught in school or his family in their home had been impressed with the necessity of pulling the nearest box at once on discovering a fire, he would have been saved an exhausting run, and the firemen would have been on the job just so much quicker than they were under the circumstances.

This incident emphasizes the wisdom of the plan adopted in many departments of instructing school children, citizens in their homes, business employees, and in fact every available person in the city in the use and purposes of the fire alarm box, its advantages and its certainty of operation. Such instructions can be given in the regular inspection rounds of the firemen, by visits to the schools of the city, by addresses at Rotary, Kiwanis and other meetings, and so on.

Whatever time and exertion may be spent upon such work by the members of the Fire Department will yield rich returns in the more general and intelligent use of the fire boxes by citizens of the city, young and old.

Quincy, Mass., Firemen Commended—Mayor McGrath of Quincy, Mass., has publicly commended the officers and men of the Quincy Fire Department for the excellent work in stopping a general alarm blaze at the boatyard of Lamb and O'Connell, in the Victory Plant at Squantum. Many yachts in winter storage were saved. Chief Alfred L. Mead was in charge, assisted by Deputy Chiefs Sands and O'Neil.

Brush Fires Give Firemen Plenty of Work

Many of the beautiful homes in the vicinity of Hollywood, Cal., were threatened by the spread of a brush fire. The fire department was kept busy all afternoon trying to extinguish the blaze.

T. HOWELL JOHNSON, PROMINENT IN FIRE CIRCLES, DEAD

Held Office in Both State Firemen's and State Chiefs' Organizations—Secretary of Eastern Fire Chiefs' Association—Died in Hospital

T. HOWELL JOHNSON, formerly chief of Bloomfield, N. J., treasurer of the New Jersey State Firemen's Association, officer of the New Jersey Chiefs' Association and secretary of the Eastern Association of Fire Chiefs, died in the Mountainside Hospital, Montclair, after a long illness during which an operation was performed. He was sixty-nine years old.

Mr. Johnson was born in Newark, and when a child, his family moved to Bloomfield. He attended the public schools there and at one time was in the plumbing business. When the fire department was organized in Bloomfield in 1882, Mr. Johnson joined the Essex Hook and Ladder Company. He served as chief from 1888 to 1893. When the Newark Athletic Club was organized, he joined as a charter member and at one time served as its secretary.

He was known throughout New Jersey fire circles for his activities among volunteer firemen. In addition there was scarcely a meting of the New Jersey Fire Chiefs' Association that he failed to attend. For the past fifteen years he was New Jersey representative of the Fabric Fire Hose Company of New York City.

The Late T. Howell Johnson

In addition he was a member of the Newark Chamber of Commerce, New Jersey Fire Chiefs' Association, Bloomfield Council Royal Arcanum, Bloomfield Exempt Firemen's Association, Bloomfield Lodge, B. P. O. Elks, Eastern Association of Fire Chiefs, and the New Jersey State Firemen's Association.

Funeral services were held from the First Presbytrian Church, Bloomfild, December 5. Interment was in the Bloomfield Cemetery.

He is survived by his wife, a son who was a former councilman in Bloomfield, a daughter and two brothers.

Chief Herring Injured at Fire

Albert Herring, Chief of the Fire Department, Murphysboro, Ill., is at home recuperating from an abdominal muscle strain received while working at a fire in a private car in the Missouri Pacific Railroad yards. The chief attempted to pull up a sheet of copper nailed to the floor that later required the combined efforts of five men.

He was rushed to St. Andrews Hospital where it was stated that he would have to undergo an operation for hernia.

The accident is particularly felt by residents of Murphysboro at this time for the chief is chairman of a Christmas relief committee and is very active in providing holiday cheer for the poor.

Chief Watson of Athens, Ga., Dead

Doma A. Watson, head of the fire department in Athens, Ga., died in a local hospital after a two weeks' illness, at the age of forty-eight.

He was born in Commerce, Ga., and while still an infant, the family moved to Athens where he spent the rest of his life. For many years he was one of the leading building contractors. In February, 1928, when a vacancy occurred in the fire department, because of the retirement of the previous chief, Mr. Watson was chosen the new head. At that time he had been a member of the department for nine years.

Surviving him are his widow, two daughters, a son, a mother, and brothers and sisters.

Finish Work on San Antonio Houses—Work has been finished on the five new fire stations for San Antonio, Tex., and Company No. 8 has already moved into its new home. The new houses cost $25,000 each.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Capabilities of Pumper

To the Editor:

Referring to the problem and solution of the pumper at Boston on page 1003 of the October 30th issue which showed a discharge of 1,020 gallons at 200 pounds pressure: to discharge 1,200 gallons at 220 pounds engine pressure would require approximately 130 H.P. which is far above the capacity of a 1,300 gallon pumper, whose horsepower would be 90.

Would the increased capacity be obtained by hooking the 1,300 gallon pumper to a high pressure hydrant? If so, what pressure would be required on the high pressure hydrant?

Thank you for the above information.

J. H.

Answer: Yes, increased capacity could be obtained by hooking a 1,300 gallon pumper to a high pressure hydrant, for in this case it would not be necessary for the centrifugal pump to develop as much pressure, and therefore there would be less slippage. It would only be a question of the ability of the pump to withstand the high pressure, and all of the better grade fire pumps at present on the market can easily withstand 220 pounds pump pressure within the pump chamber. As to the pressure necessary on the high pressure hydrant to enable the pumper to discharge 1,020 gallons at 220 pounds pump pressure, the following calculations give an approximate figure.

First find the pressure which a pumper rated at 1,300 gallons per minute at 120 pounds pressure could create when discharging 1,020 gallons per minute.

This is found by dividing the product of rated capaeity and rated pressure by actual discharge.

1,300×120÷1,020 gives 153 pounds pressure. In other words we should not justly expect the pumper to deliver more than 153 pounds pressure when discharging 1,020 gallons per minute.

As a discharge pressure of 220 pounds is desired, the high pressure system would have to provide the difference between 220 and 153 or 220—153=67 pounds. Of course the friction loss in the pump connections between the high pressure system and the discharge side of the pump would have to be takn into account. Allowing 10 pounds loss for this item, the high pressure system would be required to develop 77 pounds pressure.

An Approximate Solution

To the Editor:

I would suggest the following as a simpler method for solving different nozzle pressures in branch lines than that used by you in answer to "S. M." in the issue of October 30, 1929.

First: Split up the feed line into a number of 2½-inch lines equal to the number of lead lines and having a friction loss equal to that of the feed line.

Second: Add the resulting lengths of 2½-inch hose to the lead lines—in terms of 2½-inch hose.

Third: Solve for the total length and the nozzle in each case.

The problem as given is as follows: An engine at 200 pounds pressure is pumping through a 500-foot line of 3½-inch hose branched into three 2½-inch lines, 200 feet, 300 feet and 400 feet, respectively, in length. The 200 foot line is equipped with 1¼-inch nozzle; 330 foot line with 1¼-inch nozzle; 400 foot line with 1⅛-inch nozzle.

Find nozzle pressure in each case.

In the solution I suggest, I split up the 500 foot stretch of 3½-inch hose into three 2½-inch lines of such length as to have the same friction loss as the original line. This is done as follows: Divide the length—500 feet, by 5.8, the factor for reducing 3½-inch hose to equivalent 2½-inch lines, and multiply the result by 7.75 (the factor for reducing three 2½-inch lines to the equivalent single 2½-inch line).

Thus, 500÷5.8×7.75=670 feet. Or 500 feet of 3½-inch hose is equal to three 2½-inch lines 670 feet in length. Now, after dividing the 3½-inch line into three parallel 2½-inch lines, we add the length of each of these 2-½inch lines to the length of each of the branch lines giving us, in the first case, 670 plus 200 or 870 feet of 2½-inch hose equipped with 1¼-inch nozzle; in the second case, we have 670 plus 300 or 970 feet of 2½-inch hose fitted with 1¼-inch nozzle; the third line is 670 plus 400 or 1,070 feet of 2½-inch hose equipped with 1⅛-inch nozzle.

Nozzle pressure in each case is thereafter found by Underwriters' formula.

This method is much simpler than that followed in your solution, and eliminates a considerable amount of the work.

Sincerely yours,

J. T.

Editor's Comment: Your method of finding the length of the three parallel 2½-inch lines equivalent to the single 3½-inch line is correct. But the results you would secure by employing the method you suggest would be somewhat inaccurate for the following reasons:

Take as an example the 1¼-inch nozzle on the shorter line. This nozzle would discharge considerably more water than would, for example, the 1⅛-inch nozzle on the longer line. Thus the friction loss from the engine to the point where the 670 foot line joins the 200 foot line would be considerably more than where the 670 foot line joins the 400 foot line. But where the original layout is employed, using 500 feet of 3½-inch hose, the pressure at the Y connection is the same for all three lines. In other words, the pressure at the beginning of the 200 foot line is the same as that at the beginning of the 300 foot line, and the 400 foot line as well. By your method you would have three different pressures at the beginning of these three different lines which would introduce inaccuracies into the calculations. However, your method would give approximate results which might serve for practical application.

Floor Areas for Fire Trucks

To the Editor:

What would you consider a satisfactory floor area to allow for various types of apparatus, such as large pumper, hook and ladder truck suitable for a small community, and a chemical wagon? How much space should be allowed on all sides—in addition to space taken up by pieces of apparatus?

What would be deemed as satisfactory height of doors and ceiling for apparatus room?

R. K.

Answer: We are indebted to George Ernest Robinson, of Boston, Mass., a prominent architect of fire stations, for the following information:

Apparatus doors should be 10 ft. 6 in. wide and 11 ft. high.

A pumper requires for width 8 ft., and 26 ft. for length; a chemical, 8 ft. width and 23 ft. length; a short ladder truck, 8 ft. width and 42 ft. length; a long ladder truck, 8 ft. width and 61 ft. 3 in. length. There should be plenty of space around them to permit efficient work when cleaning apparatus.

Essentials of Fire Alarm System

To the Editor:

Will you please answer the following question in an early issue: What are the essentials of a fire alarm system?

M. E. F.

Answer: As the question does not specify the type of fire alarm system to be considered, only a general answer can be given.

The essentials of any fire alarm system are: Electric circuits; indicating and recording apparatus; dependable source of electric current; fire alarm boxes.

No Hydrant Trouble in Montreal

In the report of the Birmingham Convention of the I. A. F. C. appearing in our October 30th issue, a statement was made to the effect that last year the apparatus of six stations in Montreal responded to an alarm of fire and found five out of the six hydrants first approached to be frozen.

A check-up on this statement discloses information that this incident occurred not last year, but many years back. As a matter of fact, Montreal has experienced but comparatively few frozen hydrants during the past several years, which is a very commendable condition, considering the cold winters experienced in that city.

In the Montreal department the Ross thawing device is used with effectiveness equal to the old steam pumper for thawing hydrants. The Ross device is installed on many of the pumpers.

JOHN TERRELL APPOINTED NEW CHIEF OF ATLANTA DEPARTMENT

Succeeds the Late Chief William B. Cody at Special Meeting of Council—Member of Fire Department for Thirty-Eight Years

AT a special meeting of the city council of Atlanta, Ga., Assistant Chief John Terrell was unanimously chosen as head of the department to fill the vacancy caused by the death of Chief William B. Cody.

Chief John Terrell
Atlanta, Ga.

The new chief has been associated with the department since March, 1891. He was born in a log cabin in Cherokee County on December 24, 1869. As a boy he worked on a farm and for three years in a general store. He taught school in Cherokee County before coming to Atlanta in 1891.

He entered the fire department that same year. He was promoted to Captain June, 1894, and then transferred to Station No. 6. In February, 1926, there was a shift of officers and he was made Assistant Chief.

Chief Terrell is a past master of Atlanta Lodge, F. & A. M., past worshipful master of the fifth Masonic district, a thirty-second degree Scottish Rite Mason and a Shriner.

Members of the fire board exhibited confidence in the new Chief by voting unanimously to permit Chief Terrell to appoint officers to promotions without sanction of the board for the remainder of the year. This gives the new Chief absolute control of the department, a condition that has never existed in the department before.

Wauwatosa, Wis., to Have Fire Alarm—Wauwatosa, Wis., is to have a separate fire alarm and police signal system. The Wisconsin Inspection Bureau supplied the specifications for the contemplated system.

James Boyd, Apparatus Builder, Dead

James Boyd, third in line of a family associated with manufacturing fire department apparatus and supplies since early in the nineteenth century, died at Mawr, Pa., December 2.

The Late James Boyd

He was born in Boston, February 1, 1858, where he was educated and lived until 1881.

He organized the Electric Hose and Rubber Company, of Wilmington, Del., of which he was President for twelve years. He was Vice-President of the Standard Roller-Bearing Company, of Philadelphia, from 1898 to 1904 and a director in several manufacturing corporations in Philadelphia and New York. He was a member of the Executive Council of the Philadelphia Board of Trade from 1903 to 1916.

In 1821 a grandfather of the late Mr. Boyd was granted a patent "in the mode of manufacturing fire engine hose called Boyd's Patent Double Fire Engine Hose." This patent was signed by James Monroe, President, John Quincy Adams, Secretary of State (later president), and William Wirt, Attorney General. In 1859, a son invented cotton fire hose and obtained a patent. Another son, Alex Boyd, father of the late James Boyd, invented the Expansion Ring Screw Coupling.

The business was originally established in 1819 in Boston. The name of the concern was successively James Boyd; James Boyd & Sons; James Boyd; James Boyd and Brother; and James Boyd and Brother, Inc. The incorporation took place in 1908.

James Boyd was the organizer and president many times of the Fire Extinguisher Exchange. It was his idea that better busines relations could be established in the business. For the past twenty-five years he was president of the National Fire Protection Company, although he was inactive for the past ten years and during this period devoted his time to the development of horticulture.

The Pennsylvania Horticultural Society awarded him several medals for his work.

He was a member of the Art Club, Merion Cricket Club, the Pennsylvania Society of Sons of the Revolution, and the Academy of Natural Sciences of Philadelphia. He is survived by two sons and two daughters. The business is now being carried on by Fisher L. Boyd, of the fourth generation of that family to be so engaged.

William Finch, Chief of Athens, Dead

William Ray Finch head of the fire department in Athens, N. Y., died at his home, recently. He was active in the fire department for several years. At the funeral there was a guard of honor consisting of members of the fire departments of Athens, Sayre, and Elmira. Chief John Espey and Lieutenant Arthur W. Espey of Elmira were present.

Canton, Ohio, to Buy Pumper—Bids have been received by the Safety Director of Canton, Ohio, for the purchase of a pumper for No. 8 station.

Naugatuck, Conn., Buys Apparatus—A special car to be used in fighting brush fires has been purchased by Naugatuck, Conn.

Keokuk, Ia., Combines Fire Houses—Two uptown fire stations in Keokuk, Ia., have been combined for further centralization of the Fire Department.

Pompton Plains, N. J., to Receive Apparatus—A resident of the town of Pompton Plains, N. J., has presented the department with new fire apparatus.

Fire House Opened in Binghamton, N. Y.—A new fire house has been opened in the Sixth Ward of Binghamton, N. Y. The appointment of ten firemen has been authorized.

Portland, Ore., May Endow Ward—The Firemen's Beneficial Society of Portland, Ore., is planning to endow a ward in a local hospital to take care for any hospitalization of Portland firemen. At present the firemen are required to pay their own hospital expenses unless treated at a place designated by the city.

ENTIRE DEPARTMENT RESPONDS TO ELMIRA MERCANTILE BLAZE

First Call Received by Telephone—Building Constructed Prior to Present Building Code —Neighboring Volunteers Work at Fire

ON Armistice Night, the full resources of the Elmira Fire Department were taxed to the utmost when fire swept the three story brick mercantile building known as the Doolittle Block. A telephone alarm followed by Box 12, at 6:42 P. M., summoned Engines One, Three and Five and Trucks One, and Two with Deputy Chief Spaulding. Upon arrival, the portion of the building occuped by the Edgcomb Furniture Company was fully involved from the basement to the roof. Fire evidently followed the wooden elevator shaft to the roof where no pent-house was provided. Huge volumes of smoke were issuing from the adjoining store fronts on second and third floors. Lines were stretched in front and rear and via aerial ladder to roof. All pumpers were set and operating through three 2½-inch lines each. A double turret wagon was placed directly in front of the blazing structure on opposite curb and a Morse pipe with 1½-inch tip was fed by two pumper streams, the Hart-Phillips pipe with 1⅜-inch tip was fed by three pumper lines. An Eastman deluge set was operated in the rear with two pumper lines into same, a 1⅜-inch tip being used. Seven additional mobile lines with tips ranging from 1⅛ inches to 1¼ inches were placed at various vantage points. Bresnan distributors and cellar pipes were utilized in combatting the most stubborn cellar fire with which the Department has had to contend in years.

The only remaining apparatus when first alarm apparatus responded was Engine Four. A second alarm soon after the arrival of Deputy Chief Spalding brought this piece to the fire. Chief John H. Espey was sent for. He was assisted by Deputy Chief Collins, who responded with the "off-shift" summoned from home, and Deputy Chief Spaulding.

During the progress of the fire Lieut. A. Espey received lacerations on his left hand when plate glass fell. Several stitches were necessary to close the wound and the lieutenant returned to the fire. Three firemen were removed to a local hospital suffering from smoke sickness. Other minor injuries were reported.

The building involved was constructed prior to the adoption of Elmira's Building Code, had tile party walls through which wood roof and floor supports were run end to end. The old familiar open areaway under the roof, open cornice, wood flooring and steel ceilings, together with neglected fire doors made this fire a tough one to fight. Drums of alcohol added fuel to the flames.

Splendid co-operation of the Elmira Heights Volunteer Fire Department brought one of their pumpers into service at headquarters and, during the progress of the major fire, two good working jobs were well handled by the Heights men. Several volunteer firemen from the Borough of Sayre, Pa., journeyed to Elmira and rendered valuable aid.

The fire involved the Edgcomb Furniture Co. portion of the structure but was held to the top floor and roof of the remaining tenants' sections.

Four 750-gallon American-La France pumpers, one American-LaFrance 75-foot aerial truck, one American-LaFrance combined city service and hose truck, a double turret wagon and an Eastman deluge set were used. Five thousand two hundred feet of 2½-inch hose were laid, one length bursting under pressure. There were available six two-way hydrants within four hundred feet of the fire. The mains were 12", 14" and 20" and average hydrant pressure was 75 lbs. Pump pressure on engines varied from 160 to 200 lbs and all engines worked for better than eleven hours. One was used for sixteen hours continuously.

Sixty-one city firemen and many "buffs," aside from the regular men, worked at this fire. The loss will run about $225,000.

HELD FIRE TO TOP FLOOR HERE
FIRE ORIGINATED IN BASEMENT OF THIS COMPARTMENT
BASEMENT, REAR & FRONT, & UPPER FLOORS FULLY INVOLVED ON ARRIVAL F.D.

Ruins of Doolittle Block Fire in Elmira, N. Y.

Tar Tank Starts Serious Fire

For over twenty-two hours, members of the Manistique, Mich., fire department directed hose lines on a fire that started from a spark falling near a tar tank at the Berry Chemical Company. The tank was on the outside of the building but soon worked its way to the inside, and aided by a large amount of alcohol fumes, rapidly spread. Workmen within had little time to escape before the entire building was a raging furnace.

Shortly after the department responded, thirteen streams were playing on the fire. The heat caused by the exploding tar and alcohol tanks and stills subjected the men to severe punishment. Good work by the men prevented the fire from leaving the point of origin, and both an adjoining saw mill and lumber yard were saved. After the tanks ruptured, there was a regular sea of tar and alcohol.

All told, ten engine and three hydrant streams were used. About 4,200 feet of hose were in service. Property damage was estimated at $75,000, and this was fully covered by insurance. The men were in charge of C. E. Underwood, head of the department.

Improvements Planned for Fort Worth

According to Chief S. Ferguson, of the Fort Worth, Tex., Fire Department, a number of improvements are planned in the fire fighting facilities of the city. A portion of a $3,000,000 bond issue just adopted for civic improvements is to be devoted to these purposes, the specific amount assigned to the Fire Department being $500,000.

Of this amount $212,000 is to defray the cost of a new fire alarm signal station and equipment; $175,000 for a new central fire station and fire department repair shops, and the balance of the amount is to be expended in the purchase of sites for this group of buildings.

William C. Green Chief 35 Years—On December 11 Chief William C. Green of Concord, N. H., rounded out thirty-five years' service as head of the Fire Department.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

Week Ending November 29

WOODVILLE, FLA.—Seven business buildings destroyed..... 40
RICHMOND, IND.—Garage of Chenoweth Auto Co..... 25
ALTON, ILL.—A. B. C. Bakery destroyed..... 125
PITCAIRN, PA.—Four business buildings damaged..... 40
ADA, OHIO—Warehouse of John Keith destroyed..... 35
TOLEDO, OHIO—Marine building destroyed..... 50
ORLANDO, FLA.—Warehouse of O'Barry Hall Co. destroyed.... 80
RUMFORD, ME.—Hotel Rumford, adjoining property..... 250
SHARON, PA.—J. M. Willson & Sons store, adjoining building.... 65
N. TONAWANDA, N. Y.—Garage of J. B. Misner..... 80
PITTSBURGH, PA.—Leader building damaged..... 100
TROY, N. Y.—Hillside school damaged..... 80
STONY CREEK, N. Y.—Austin Bros. sawmill destroyed..... 40
NEW YORK, N. Y.—Rainbow Inn damaged..... 75
WESLACO, TEX.—Stephen F. Austin School damaged..... 30
DWIGHT, ILL.—Kepplinger block destroyed..... 150
WATERMAN, ILL.—High school building damaged..... 40
NEW YORK, N. Y.—Warehouse of Hecker, Jones & Jewell Co.... 80
ATLANTA, GA.—Dwelling of Harry English, Pace's Ferry Rd..... 65
SYLACAUGA, ALA.—American Theatre, adjoining buildings..... 30
HAINES, ORE.—E. W. Hearing warehouse..... 25
MONTICELLO, MINN.—Plant of Monticello Preserving Co..... 75
MERRILL, WISC.—Warehouse of Merrill Wood Products Co..... 40
LE SUEUR, MINN.—R. E. Jones' elevator..... 40
NEW BRITAIN, CONN.—First Church of Christ damaged..... 40
TOLEDO, OHIO—Hofmann Bros. Co. store damaged..... 25
BALTIMORE, MD.—Bldg. of Schenuit Tire Co..... 200
CORTLAND, N. Y.—Tully high school destroyed..... 45
BANGOR, ME.—Warehouse of John Cassidy Co..... 25

Week Ending December 6

ANDES, N. Y.—Plant of the Andes Creamery Co..... 40
CONYNGHAM, PA.—Residence of Mrs. A. E. Howes..... 25
UKIAH, CALIF.—Methodist church destroyed..... 50
CUYAHOGA HEIGHTS, OHIO—Hinkley-Dwight Lumber Co. plant.. 125
WINCHESTER, KY.—Plant of the Hon Lumber Co. destroyed..... 80
TOLEDO, OHIO—Bldg. of Madison Investment Co..... 40
HATTIESBURG, MISS.—Buildings at 200-206 Pine St..... 25
DEPORT, TEX.—Business property damaged..... 45
SACRAMENTO, CALIF.—Capital Hotel, adj. property..... 400
PARSHALL, N. D.—Woodworth grain elevator destroyed..... 50
HOLGATE, OHIO—Commercial garage destroyed..... 25
MARSHALLTOWN, IA.—Bldg. of Marshall County Bridge Wks..... 25
HAMPTON, N. H.—Carnival dance hall destroyed..... 25
WARE, MASS.—D. T. Hastings Co. warehouse..... 40
PORT CREDIT, ONT.—Lodge Hotel, Lake Shore Rd..... 60
TELLURIDE, COLO.—Property of Alta Mine destroyed..... 400
FORT DODGE, IA.—Tobin College bldge. destroyed..... 50
MAYBURY, W. VA.—Elkhorn colliery tipple of Mill Creek Coal Co. 80
BUFFALO, N. Y.—Clubhouse of Buffalo Trap & Field Club..... 150
ELLSWORTH, ME.—Dirigo Theatre destroyed..... 30
ATLANTIC, IA.—Atlantic Theatre, adj. property..... 60
CAMBRIDGE, MASS.—Irman Square Theatre destroyed..... 100
SPRINGFIELD, MASS.—Plant of New England Smelting Wks..... 80
FRIENDS LAKE, N. Y.—Home of Thos. McPhillips..... 40
SAN FRANCISCO, CAL.—Sing Lee laundry, adj. property..... 25
DEVON, W. VA.—Devon Hotel and Kaboi store..... 25
CHICAGO, ILL.—Bldg. of Cullotta Importing Co..... 35
ST. CLOUD, MINN.—Terminal of Raymond Transportation Co.... 65
EVANSTON, ILL.—Du Breuil Tea Room, adj. property..... 125
LOGANSPORT, IND.—Three business bldgs., others damaged..... 200
BRONX, N. Y.—Vermilyea Ave. business property..... 75
VISALIA, CAL.—Kaweah garage and 30 automobiles..... 40
PANAMA CITY, FLA.—Lynnhaven Hotel, 3 mi. north..... 40
DECATUR, ALA.—Butterfly dept. store, adj. bldg..... 165
N. ATTLEBORO, MASS.—Grace Episcopal Church destroyed..... 75
STAUNTON, VA.—Property of Western State Hospital..... 25
PROSSER, WASH.—Sommers' garage destroyed..... 30
SUFFOLK, VA.—Plant of King Overall Co..... 25
WOODBINE, N. J.—Woodbine Community Center bldg..... 30
DUBUQUE, IA.—Business and apt. property..... 40

Massachusetts Fire Chiefs Meet

The November luncheon and meeting of the Fire Chiefs' Club of Massachusetts was held in the Parker House, Boston, Mass., on November 21, with Chief Selden R. Allen, of Brookline, presiding.

Members of the special committee appointed by Governor Frank G. Allen to investigate and revise the existing laws on fire prevention and fire departments were guests of the club. William Ollendorf, Chairman of the committee; Daniel O'Connor, Secretary; Russell Codman, and Peter E. Walsh, ex-Chief of the Boston Fire Department, were the members of the committee attending, in addition to General Foote, Commissioner of the Department of Public Safety.

Assistant Chief Thomas F. Dougherty and Deputy Chief Elmer Mustard, of the New York Fire Department, were also guests of the club.

Announcement was made of the election to membership of Chief Lawrence H. Woodman, of Essex, Mass.

Recommendations and suggestions for improvements in the existing statutes on fire matters were brought in by Chief Daniel Tierney, of Arlington, Mass., as chairman of the special committee of the Chiefs' Club appointed by President Allen to investigate the matter of revising the laws. The other members of the committee were Chief Clarence Randlett, Newton; Chief Jamesh M. Casey, Cambridge; Chief Fred A. Clark, Attleboro, and Chief William C. Mahoney, of Peabody. Walter A. Wedger, former state chemist, was technical advisor to the committee.

The questions of regulations for fireworks and for transportation of dynamite and other explosives were discussed, also uniform rules for garages and filling stations and for installation of oil burners.

It was the opinion of the chiefs that private use of firecrackers should be prohibited and that only properly supervised public displays of fireworks should be permitted. It was urged that the use of sparklers be prohibited because of the fatal accidents to children which have resulted from dresses becoming ignited from the hot wire base of the sparklers.

There was a large attendance and much interesting discussion at the meeting. Chief Daniel F. Sennott, of Boston, was among those at the head table.

Standardization of Building Exits

A national standard safety code for building exits aimed to cut down the annual loss of 15,000 lives by fire in the United States, has just been approved by the American Standards Association and made available for adoption by state and municipal authorities and for use by architects, engineers and builders. The code was prepared by a technical committee of thirty representatives of safety and insurance organizations, federal government departments, state departments of labor, local fire departments, architects, engineers and others. It represents sixteen years of study by this committee and its predecessors.

The National Fire Protection Association assumed the technical leadership in the preparation of the code under the national standardization procedure of the American Standards Association. The code contains an entire new section on theatres and other places of public assembly, and a revision and enlargement of a tentative code issued in 1927, covering safe exit provisions for schools, hospitals, department stores, factories and other occupancies.

In the section on theatres, the code says:

"The practice of allowing persons to stand near exits, however, should be discouraged if not prohibited altogether. The utilization of standing space within theatres or motion picture theatre auditoriums should be prohibited."

The code also states that:

"The line of travel to an exit door by any aisle shall be not greater than 150 feet, and if more than 100 ft. it shall have not more than one angle or turn. Not more than twenty transverse rows of seats shall be placed between cross aisles. Not more than ten rows of seats nor twelve feet of rise may be placed between cross aisles where steps are provided in the main aisles to overcome differences in level. Cross aisles shall be not less than forty-four inches wide, unless railed away from the seats fronting thereon. If so railed the width shall not be less than three feet."

Particular attention in the code is devoted to fire drills.

"In buildings where the population is of a changing character and not under discipline, for example, in hotels or in department stores, no regularly organized fire exit drill, such as that which may be conducted in schools, is possible," says the code. "In such cases the fire exit drills must be limited to the regular employees who, however, can be thoroughly schooled in the proper procedure and can be trained to properly direct other occupants of the building in case of fire. In occupancies such as hospitals, no regularly constituted fire exit drill is praticable. Here again, however, the regular employees can be rehearsed in the proper procedure in case of fire; such training always is advisable in all occupancies whether or not regular fire exit drills can be held."

In an extensive section of the code devoted to schools, school buildings of low height are recommended because of their greater safety. The code recognizes the necessity for higher buildings in cities, however, and provides accordingly. The code stipulates that schools should have corridors at least eight feet wide and it recommends that in elementary schools lockers should not be located in corridors.

In the part of the code devoted to department stores it is provided that no portion of any building or section shall be more than one hundred feet (along the line of travel) from the nearest exit.

Alfred M. Hogston Appoints Deputies—Three non-salaried deputy fire marshals were appointed by Alfred M. Hogston, fire marshal of Indiana. The men appointed are C. E. Stoop, Indianapolis, formerly a captain of the Fort Wayne Fire Department; F. E. Champaigne, city electrician of South Bend, and W. S. Young, city electrician of Michigan City.

NEW COLONIAL TYPE STATION FOR PITTSBURGH DEPARTMENT

Building Now in Course of Construction Replaces Old Frame Structure—Modern in Every Respect—Description of the Building

By WILLIAM E. PATTERSON
Pittsburgh Fire Department

A NEW fire station, one of the most modern and attractive in the city, with all the conveniences and homelike comforts of a private residence, is now being erected in Pittsburgh, Pa.

The new building replaces an old frame structure occupied by Engine and Truck Companies No. 53 at Haslage Avenue and Rhine Street, Spring Hill, a residential section of the North Side. The old house has been in a very bad condition for a number of years and the new one is being erected on a new site at Homer and Damas Streets, a short distance from the present location.

The new building is being erected from designs and specifications made under the supervision of Richard Neff, City Architect, at a cost of $49,824. It will be the first and only fire station to be erected in the city without the customary hose tower extending above the roof. Hose racks are provided, instead, in the basement of the building for the storage and drying of hose.

The new building, designed along the lines of Colonial architecture, is a two-story L-shaped structure of dark red tapestry brick with gray Indiana limestone trimmings and roof of multi-colored slate. It will set in the center of an irregular shaped plot of ground, which will allow for a nice lawn and yard on either side and in the rear of the structure. In connection with the new building, a soldiers' memorial and flag pole are to be erected in a section of the lawn at the intersection of the two streets.

The building, which is two stories in height, with a one-story wing built on the left rear side of the structure, containing lounging room, kitchen and toilet room, has an extreme width over all of 56 feet 7 inches and a total depth of 61 feet 3 inches. The main section of the building containing the apparatus room and dormitory has a frontage of thirty-four feet.

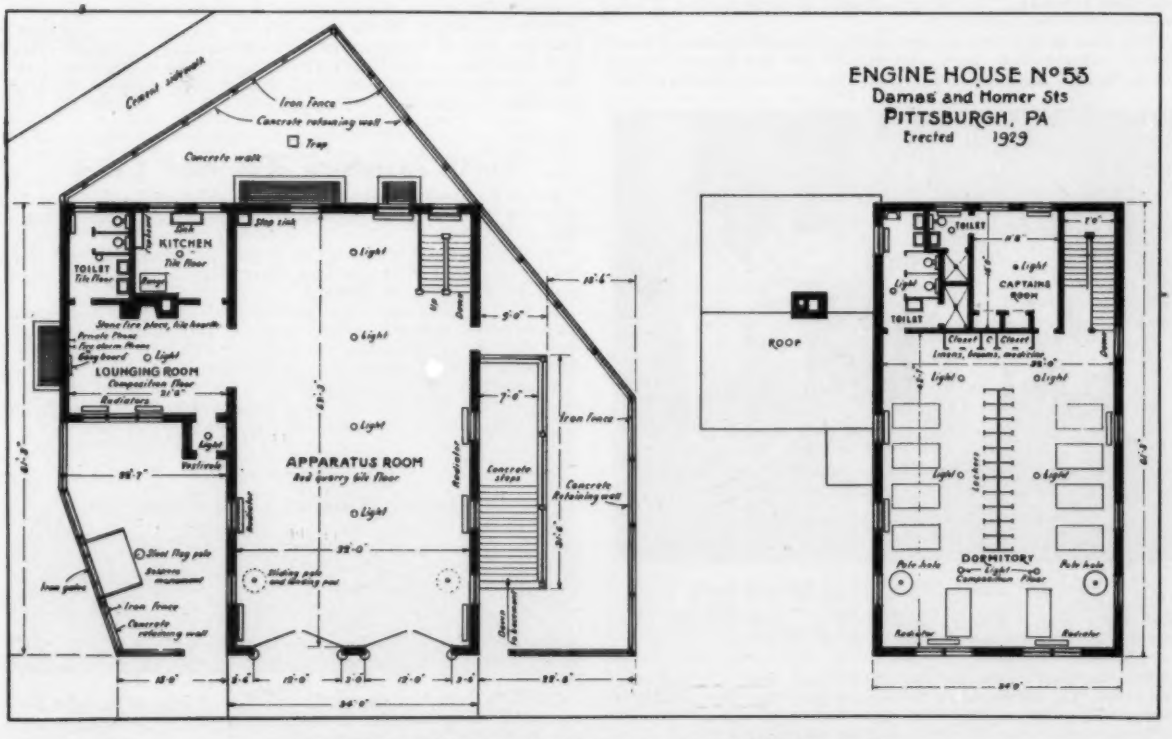
The apparatus room is 31 feet 10 inches wide, 59 feet long and 15 feet high with a quarry red tile block floor placed over a floor of solid concrete and arched tile. It will have a handsome tile wainscoting, five feet high.

The lounging room, which faces Homer Street, with the main entrance through an attractive looking vestibule, is 21 feet wide and 14 feet 10 inches deep, and has a handsome brick fireplace and mantelpiece, 7 feet 8 inches wide and a concrete floor with composition surface.

Directly in the rear of the lounging room is located a kitchen, 12 feet 5 inches wide and 12 feet long, with gas range, white enameled sink, cupboard and china closet, and a toilet room adjoining. The fire alarm instruments, consisting of large gong, punching tape register, telephone and running card, will be located in the lounging room.

Fire Station No. 53, Pittsburgh, Pa.

The dormitory, located on the second floor of the building, is 42 feet 7 inches long and 31 feet 10 inches wide, and 15 feet high with a composition floor. In the center of the bunk room are located twenty-two large sized lockers in two rows of eleven each, while in the rear of the bunk room are built a linen closet, broom closet and medicine cabinet.



Floor Plans of New Station for Engine No. 53, Pittsburgh, Pa.

Nine large windows in the bunk room will give an abundance of light and air, making this room an ideal one for sleeping quarters.

In the rear of the bunk room is located the Captain's office, 16 feet long and 11 feet 8 inches wide, with two large built-in linen closets and with toilet room adjoining containing wash stand, toilet and shower bath. The floor is of composition.

A large toilet room in the rear of the second floor adjoining the Captain's quarters is provided for the men.

The basement, extending under the entire building, contains the boiler room and coal storage room. In the rear of the basement is located the toilet room and shower bath.

Twenty-four large sized lockers built in three sets of eight each, are located in the basement.

A hose trough for washing hose with drying racks above, equipped with three electric fans for drying, is located on one side of the basement.

A concrete staircase, seven feet wide, built on the right side of the building, provides an outside entrance to the basement from the yard.

Chief Herring Starts First Aid Team

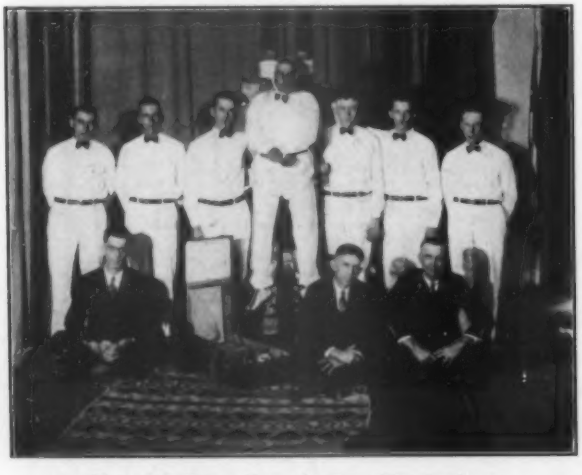
Those who delight in propounding the theory that fire chiefs' conventions are but a waste of time, have but to note what Chief Albert Herring, of Murphysboro, Ill., has accomplished, following ideas gained at the last I. A. F. C. convention. He made the trip to Birmingham at his own expense and feels well repaid with new thoughts in fire department work.

He returned to his city determined to start a first aid team. There were not enough men in the department to warrant this, although such a unit would be of material benefit to the community. He went to the manager of the Western United Gas and Electric Company and asked him for men with which to start the good work. The manager was very well impressed and cooperated with the chief in every way possible.

The team started practicing October 29. It has become so proficient in the various evolutions that Chief Herring is anxious to arrange for some kind of a drill team competition in the state and to enter the unit that he started.

Several public demonstrations have been given. The team explained the Schaffer method of artificial respiration. At this public exhibition they bandaged a man who was supposed to have been burned from the hips to the top of his head, and they completed the operations in one minute, fifty-one seconds. Teams are allowed a contest time of five minutes for this operation.

The men also exhibited first aid operations for one whose spinal column had been dislocated. In the astonishingly short time of one minute and forty-five seconds the team had



First Aid Team Organized in Murphysboro

Chief Herring is seated at the right, front row. In the center is a man trussed up on body-length splints for a supposedly dislocated spinal column. The men are not members of the fire departmnt.

nailed together a body-long splint and had trussed the victim to this frame work in such a way that he could not move. The bandaging held the dislocated spinal column rigid and prevented it from touching anything.

The demonstrations were conducted in the high school auditorium, and so great was local interest in the newly formed group, that the place was crowded.

Ex-Chief Walsh Heads Boston Patrol

Peter E. Walsh, ex-chief of the fire department of Boston, Mass., has been appointed superintendent of the Boston Protective Department as successor to Supt. Henry Thompson who retires on pension on January 1.

Peter E. Walsh

Supt. Walsh was born September 25, 1868, and joined the Boston Fire Department on July 29, 1892. He was promoted to lieutenant on August 28, 1896 and to captain in 1904. In 1913 he was made district chief and in 1919 was appointed Chief of Department as successor to Chief Peter F. McDonough. Walsh was awarded a medal for saving a woman's life at a fire in 1901. He was retired on pension when the next change of municipal administration took place in Boston; but was recalled to active service a few years ago to head the new fire prevention bureau of the Boston Fire Department.

After the work of inspection had been reorganized and the bureau was functioning in a highly efficient manner Walsh was forced to give up the post of superintendent of the fire prevention bureau by a ruling of the Civil Service Board which refused to sanction a pensioned man holding this position although the pension was suspended during the term he held the position.

Supt. Walsh for the past few years has been engaged in private law work. He is a member of the Massachusetts bar and has served on the civil service examination board. He is a member of the Fire Chiefs' Club of Massachusetts, the New England Association of Fire Chiefs, and the International Association of Fire Chiefs.

North Attleboro Has New Chief

Ralph C. Robertson has been made chief of the fire department in North Attleboro, Mass., succeeding the late Chief Harry W. Tufts.

Chief Robertson was born in North Attleboro in 1896 and became a member of the fire department in 1914. He was assigned as driver of Hose 2.

In 1919 he was appointed superintendent of the fire alarm system and continued in that position until a year ago. On May 1, 1928, he was made a member of the Board of Fire Engineers and was named as first assistant to Chief Tufts.

At a recent meeting of the board he was elected chief of department. The North Attleboro department has three fire houses and a personnel of sixty men.

HARRY BELKNAP.

California Chiefs Plan Program

The board of directors of the Southern California Fire Chiefs' Club met in the office of Chief C. E. Sullivan, Avalon, Catalina Island, to plan for the coming convention of the organization. The board consists of Chief E. F. Coop, Pasadena, chairman, Chief W. J. Mohr, Santa Monica and G. E. Zimmerman, secretary-treasurer of the club.

The island is twenty-seven miles off the main land and south of Los Angeles. The convention will be held in Avalon, January 18-19.

Chief Sullivan has arranged a number of interesting trips for the ladies. On Saturday evening there will be a dance in the new $2,000,000 casino which extends out into the ocean. There will be a motion picture show for those who do not care to dance.

Hazards of Refrigeration

(*Continued from page* 1126)

in first floor halls of offices and factory buildings and on subway platforms. So complete prohibition should be made for such places but care should be taken in the location of refrigeration units and in the running of pipes. In most of these places, indirect refrigeration would be preferable.

Need for Regulation and Inspection

There is need with refrigeration, as with practically all industries and arts, for complete installation regulations and for suitable testing of the equipment. Also some provision must be made for an adequate inspection service, and for proper equipment of the fire department to handle such materials without danger to the firemen.

In the large individual ice plant, or cold storage place, there is little need of special precautions. These plants are usually isolated, although cold storage plants may be in a congested wholesale section. In the buildings themselves. there are few people employed so that the life hazard is not an important consideration.

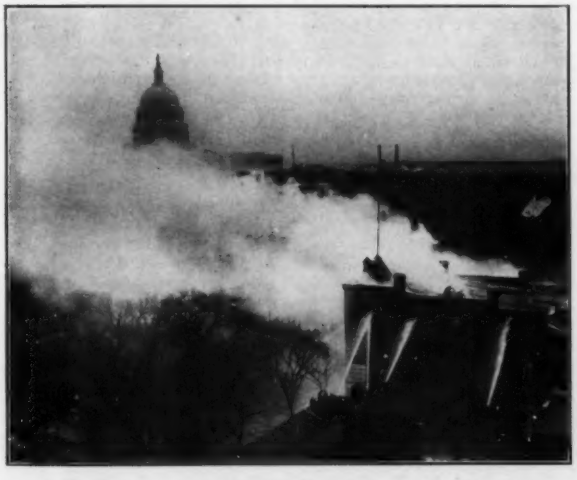
With these larger systems, which generally use ammonia or carbon dioxide, the operating pressures are high and therefore a first class grade of workmanship is required, or else there will be gaskets blown out and other defects will arise. Complete valving of the system is necessary to prevent much leakage in case of a break, and also to permit repairs without shutting down the whole system.

Necessity for Quick Shut-off

With any system where gases are under pressure there is a danger of a pressure rupture due to a failure of some part to function, or to the heat generated by a fire. Therefore devices are necessary in these larger systems, and in most of the smaller ones, which will shut the machine down in case of excess pressure; also other devices, such as a safety valve which will blow from high pressure. Some use a frangible disk, which will blow out, and others provide a fusible plug which will melt in case of a fire.

Any large refrigeration plant should have provisions for shutting down the machinery without going into the room, as the gases which would come from a break, would prevent entering the room without an oxygen helmet. The New York city regulations and those recommended by the Society of Refrigerating Engineers provide that each plant of large capacity should have an oxygen helmet located near the entrance so that it could be reached and used in an emergency. Where ammonia is used, it is desirable in case of trouble on the system to have a valve so located that the gas in the system can be discharged to a body of water.

Many hotels are installing extensive refrigeration systems. The simplest form is a small ice-making plant usually located in the basement. From this, extensions have been made so that now most large hotels have refrigerators coolers and other devices located in different parts of the building and supplied either with brine or direct refrigeration. Because of the life hazard, the indirect method is preferable for buildings of this character. The refrigerating plant should be located in a separate room or in a room in which other machinery, such as the pumping plant, is maintained but it would be preferable not to have it in the same room with electric generators or where the boiler room is located, as many of the gases used for refrigerating are of an explosive nature and a leak may result in an explosion if the point of ignition is available. Hotels are also supplying ice water to rooms and putting in artificial ventilation. The tendency will be to use direct refrigeration for this purpose because of the relative cheapness of this method. It is inadvisable to use the direct method in connection with the cooling unit of a ventilating system because of the possible injury to people sleeping in the rooms; even a carbon dioxide system would introduce a possibility of suffocation although not of toxic poisoning.



Firemen Battle Flames Near Dome of Capitol

Government employees in Washington, D. C., left their desks in the Capitol Building and crowded into the dome to watch firemen fight a fire in a four-story building. The firemen were endangered by falling walls. The dome of the Capitol can be seen through the smoke.

Hazards in Methods of Installation

A subject not to be overlooked and though somewhat 1oreign to the average Chief, is yet of sufficient importance to call attention to at this time. It is the methods of installation, hazards to be guarded against in methods of installation, and grounding, especially of the portable isolated installations, with regards to the life hazard—of the electrical part or parts of this work. I understand that there are electrical committees now working on this subject and our consideration and cooperation may help to bring about a safer standard, as, after all, it is the fire chief who has to meet the emergency when any of these plants go wrong.

Extraordinary Conditions Created

One might suppose that the ordinary electrical code would be liable to take care of this part of the work, but the vagaries of these heretofore little used refrigerants create extraordinary conditions seldom met with in the past. As set forth previously in this paper, some of the refrigerants used are of an explosive nature and therefore, arcing or sparking of the electrical parts, whether accidental or through the normal functioning of the apparatus, gives rise to a serious condition.

Dangers in Isolated Installations

In the case of isolated installations, the unit is usually incased in a non-metallic material, or in any case it is generally found on a wood, linoleum or similar floor. The installations are also usually in or near a kitchen, where there is a liklihood of the existence of exposed and grounded piping. Here enters the life hazard. Should the insulation of the electrical carrying parts break down and a person come in contact with them and any grounded fixture, the result could be fatal, as statistics show.

In the contemplation of any code covering electrical refrigeration, the writer does not profess to be sufficiently versed to know how to treat the electrical part of this subject, yet believes that it concerns the Fire Chiefs enough to have it incorporated in such a code by those better informed on the subject.

A very extensive use of refrigeration is developing in small meat markets, florist shops, grocery stores, and in connection with fur storage. These plants are generally small and consist of a compressor of 100 to 300 pounds capacity, supplying one or two evaporators. The more common class have used ammonia but a number of other refrigerants are now being developed for plants of this kind.

Multiple Installations in Apartments

In my city, there are many hundred multiple installations in apartments with as many as twenty boxes to a compressor. Up until recently the party making the installation could install the piping, compressors, etc., just as he pleased, resulting in many poor installations, often requiring the attention of the fire department to stop leaks because of inferior workmanship. Copper tubing was exposed from the basement to the apartments, through dumbwaiter shafts, in fact through any part of the building that was convenient, without any regard to the safety of the tenants. It was tied up with strings, bent sharply around corners, could be hit by ladders or other articles carried by the janitor and had joints at any place convenient to the installer. This was done with one thought and no other, the cheapness of the installation, in order to get the contract from competitors.

Naturally, I was very anxious about these installations and started making inquiries among other chiefs in this section.

Work of Committee on Regulations for Installation

Not finding any regulation for the installation of multiple refrigerators in buildings, the subject was brought before the New Jersey State Fire Chiefs' Association early in 1928. A committee was appointed by President Greenfield of this Association, to look into the advisability of getting suitable regulation for the proper installations of all refrigeration machines. The committee consists of myself as Chairman, Chief John Towey, of Newark, N. J., Chief James McMilan, of Orange, N. J., and Leon A. Watson, of the Schedule Rating Office, Newark, N. J. Many meetings were held on this question. George W. Booth, A. C. Hutson, and H. E. Newell, of the National Board of Fire Underwriters, gave their hearty cooperation to the committee, for which we are very thankful. It was decided by all concerned that some regulations should be drawn to safeguard the tenants in the building housing multiple systems of refrigeration.

The result of this work has been the preparation by the National Board of Fire Underwriters of a code of installation for multiple refrigeration systems.

In our city we are getting multiple systems installed in accordance with the regulations of the National Board of Fire Underwriters, and are holding off passing an ordinance which will cover all systems, big and little, until the National Board of Fire Underwriters issued an ordinance which its engineers believe suitable.

Use of this code assures the proper installation of multiple systems. It provides for the location and protection of the compressor, the protection of the copper tubes in solid and flexible conduit, the suitable fastening of refrigerators, proper valving, etc.

All Systems Should be Tested by Underwriters' Laboratories

All multiple systems should be tested and listed by the Laboratories of the National Board of Fire Underwriters before they are permitted to be installed. If this plan is followed in all cities, a uniform installation will be obtained which will reduce to a minimum all hazards and safeguard the health and lives of firemen and apartment house dwellers.

Chiefs Must be Prepared to Handle Refrigeration Hazards

The progressive chief will fortify his department with the necessary equipment, masks, etc., to properly handle all refrigerants now used in ice-machines in times of emergency. This work can be handled by regular companies of firemen properly equipped, but should be done preferably by chosen companies specially trained for this work. Like the oil burning heaters used extensively today, the artificial ice making machines are here to stay and will have to be recognized by all chiefs as part of the regular fire department work in emergencies. Firemen are always called when a leak develops in any building housing mechanical ice machines. At least I find it so.

My experience has been that, regardless of whether the gas is escaping from the individual unit or the multiple system, it is always necessary to wear a mask to enter the building. I believe that all agree that every refrigerant should have some kind of an irritant in it as a warning to the tenant, especially while sleeping, in order that they would at least wake up and have a chance to escape. This would apply to all gases that are known to be dangerous to life.

(From a paper read before the annual convention of the International Association of Fire Chiefs at Birmingham, Ala.)

Night Club Guests Routed by Fire

Fifty guests of a night club on East 4th street, New York city, were routed out by a fire that completely wrecked the place and caused a damage estimated at $100,000.

Relation of Department to Population

(*Continued from page* 1132)

notice that a dangerous fire was raging in the city. Notwithstanding this notice, which every firemen received by telegraph, the platoon going off duty at 6 o'clock, when summonded to return for duty at 10:15, by a recall signal, did not respond in force. A few men reported after one hour, some more within two hours, and so on, strung out over a period of eight hours, when 112 men and officers, out of a total of 1,575 on the off-platoon, had reported.

"This to my mind, is conclusive evidence that the platoon on duty must be strong enough to protect the lives and property of this city. No reliance can be placed upon men who may be twenty, twenty-five or even thirty miles away. The dangerous time at all fires seems to be the first thirty minutes. A fire not under control in one hour is regarded by fire officers as a dangerous fire and may develop into conflagration proportions; consequently, in large cities, at least, where it is difficult to reach men on an off-shift, the shift on duty must be strong enough to cope with all emergencies."

Engine or ladder companies going out with only two or three men are obliged to depend upon assistance from men in other companies or from citizens to make effective use of the apparatus and equipment with which they are provided. Some cities do, and all of them ought to have definite provisions for calling the men on the off-shift in the event a conflagration or even a large fire occurs.

Capacity of Pumping Engines

It has been the general practice of the National Board to recommend that pumping engines for fire department use have a capacity of at least 750 gallons per minute. This in most cases requires a specially built machine, although it is possible to obtain commercial truck and bus chassis which have engines of sufficient capacity to deliver this quantity of water.

Machines built for fire service, of this capacity and greater, are expensive and numerous attempts have been made to provide cheaper machines by placing a pump on a light commercial chassis; this usually results in machines of 500 gallons and less capacity.

Although these smaller machines render reasonably good fire service it is questionable whether they are economical in the long run. A piece of fire apparatus should be good for at least twenty-five years' service, on the basis of its hours of use as compared with that given a commercial truck of similar make. It is therefore wise to consider the purchase of fire apparatus as an investment which will give satisfaction for many years to come.

(From a paper read before the meeting of the Fire Waste Council at Washington, D. C., on October 1.

Capt. Bacon Named Chief of Weymouth

Capt. J. R. Bacon has been appointed Chief of the Fire Department of Weymouth, Mass., as successor to the late Chief John Q. Hunt.

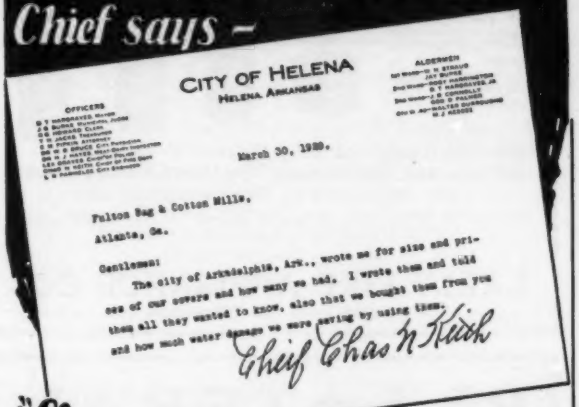
Chief Bacon is president of the Weymouth Firemen's Relief Association and comes of a family of fire fighters, as his father and grandfather were both Weymouth firemen.

The appointment of Chief Bacon was made at a meeting of the Board of Selectmen on Nov. 13. He has been a member of the Weymouth Department for twenty-four years.

HARRY BELKNAP.

Rensselaer, N. Y., Companies Celebrate—The E. P. Hart Company of Rensselaer, N. Y., held a celebration to mark the acceptance of a 1,000-gallon pumper, and the J. N. Ring Company honored a fireman who for fifty years was an active member. City officials were present at both events.

Another Prominent Fire Chief says –



CITY OF HELENA
HELENA, ARKANSAS

March 30, 1929.

Fulton Bag & Cotton Mills,
Atlanta, Ga.

Gentlemen:

The city of Arkadelphia, Ark., wrote me for size and prices of our covers and how many we had. I wrote them and told them all they wanted to know, also that we bought them from you and how much water damage we were saving by using them.

Chief Chas N Kirk

"Shuredry" Waterproofed SALVAGE COVERS

More evidence of the importance of "Shuredry" Salvage Covers to every Fire Department, no matter where located.

Not only do Shuredry Covers cost less than rubber, they are much easier to handle and spread, and do not peel or crack when folded and stored.

Write our nearest plant for samples and prices.

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Manufacturers Since 1870

The Clark Oxygen Carbon Dioxide Inhalator

In construction, operation and results, the Clark Inhalator establishes new and better standards.

Results are of course your first consideration and you will get them with the Clark because it is specially adapted for and gives an improved and more effective treatment. Learn more about this "better" inhalator. A postal brings the entire story.

McDonald Engineering Corp.
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STERLING
No. 12

TRAFFIC ALWAYS OBEYS A STERLING NO. 12

Municipal traffic conditions grow more congested daily, but the congestion disappears like magic when drivers hear the STERLING No. 12.

Its unmistakable tone warns them the fire department is coming . . . the way is cleared for it. The STERLING No. 12 is giving service the world over.

Inclosed high speed ball bearing motor; balanced five inch fan; micrometer clearances; complete with bracket, cord and switch . . . $45.00 f.o.b. Rochester, N. Y.

Write for Bulletin 660

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Standard for Fifty Years

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	One	More Than One
Gold Filled	$5.00	$4.50
Silver	4.50	4.00
Gold Plate	1.50	1.25
Nickel	1.00	.75

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Always ready for instant use.

For Personal Safety use

DONTFEAR

Smoke and Fume Respirators

Positive protection against smoke, fumes and gases.

Price $5, Goggles $1 extra; Canisters 50 cents

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Don'tfear Mask Co.

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Novo Acid Jars & Holders

of every description stronger than lead and non-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

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Founded 1824 by Jacob Reed

FIREMEN'S UNIFORMS

Thoroughly tailored of especially selected fabrics. Uniforms that look well, wear well and that will give entirely satisfactory service.

Reed's Uniforms are most economical because they represent full value for the amount expended.

Write for catalog and prices.

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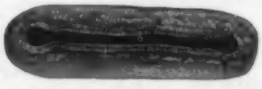
BI-LATERAL FIRE HOSE

"IT'S DIFFERENT"

Fire hose of every description, make or kind has to be stored flattened ninety-nine percent of the time.
The flattening of Bi-Lateral Hose curves the rubber in the space that is free from the jacket.
Hose manufactured the old way compresses and creases the rubber when it is flattened.

"THAT'S THE DIFFERENCE"



BI-LATERAL FIRE HOSE CO.

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Chicago, Ill.

Quick-Acting Reliable

Anderson-Hale Improved

FIRE STATION DOOR OPENERS

Over 1,300 sets of Anderson-Hale Fire Station Door Openers are in successful use. They provide simple, durable, quick-acting doors that open inward. No obstruction to sidewalk. Attractive in appearance, cannot sag, closes tight, excludes cold, gives clear opening. Opens from driver's seat or from floor. Many repeat orders from users.

Write for complete information.

The Anderson Coupling & Fire Supply Co.

Mfrs. Motor Fire Equipment and Fire Supplies

Kansas City, Kansas

Clifton Salvage Covers

Are made of strong, heavy duck and lapped seams and are designed of such thickness and weight as to be light enough to be handled quickly and rigid enough for the most strenuous service. They are rubberized on both sides with a double coating of a high grade, long life, rubber compound.

CLIFTON SALVAGE COVERS are built to stand the heaviest abuse and are used by many of the large Protective Departments.

May we send you further particulars?

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BODY GUARD

FIRE FIGHTERS CLOTHING

GIVES real protection and comfort in any weather and at any kind of fire. Designed to permit freedom of action, eliminating cumbersome excess weight. Made of materials that withstand the hardest kind of usage. Bodyguard apparel is used by Firemen everywhere.

BODY-GUARD BRAND

THE BODY GUARD MANUFACTURING CO.

ST. JOSEPH - - MISSOURI

Why not send for some of the new catalog material listed on page 1155 of this issue?

FIRE DEPARTMENT ACTIVITIES

Salina, Kans., Buys Pumper—Salina, Kans., has purchased a 1,300 g.p.m. Ahrens-Fox pumper.

Flint, Mich., to Have Fire Prevention Committee—A fire prevention committee is being organized in Flint, Mich.

Apparatus Delivered to Ravena, N. Y.—Sanford fire apparatus has been delivered to Ravena, N. Y.

Warwick, N. Y., Buys Apparatus—Warwick, N. Y., has purchased a 750-gallon Maxim pumper.

More Equipment Planned for Oakland, Ia.—Oakland, Ia., is planning to purchase additional equipment.

Pumper Purchased for Ottawa, Ohio—A 600-gallon Seagrave pumper has been purchased by Ottawa, Ohio. A 750-gallon pumper was considered but deemed too expensive.

Berkeley, Cal., to Improve Department—Berkeley, Cal., intends to provide $25,000 to improve fire fighting facilities for fighting hill fires.

Bethlehem, Pa., to Buy Apparatus—Bethlehem, Pa., has closed bids on a 75-foot aerial ladder and a 1,000-gallon triple combination pumper.

Kokomo, Ind., Receives Inhalators—A number of inhalators have been delivered for use of the Kokomo, Ind., fire department.

Pumper Delivered to Hightstown—A 500-gallon pumper has been delivered to Hightstown, N. J. It was purchased from the proceeds of carnivals and other department affairs.

Santa Barbara Needs Fireboat—City officials of Santa Barbara, Cal., have had called to their attention the city's need of a fireboat to protect waterfront property.

Silverdale, Pa., Buys Pumper—A 500-gallon Seagrave pumper has been purchased by the fire department of Silverdale, Pa.

Apparatus Delivered to Garrison, N. Y.—Through the generosity of a former resident, Garrison, N. Y., has received new fire apparatus and a station in which to house it.

Haskell, N. J., Accepts Fire Apparatus—Haskell, N. J., has officially accepted the new 600-gallon Buffalo pumper. The machine has passed the Underwriters' test.

Gardiner, Me., to Buy Apparatus—Gardiner, Me., is raising money by a series of entertainments to purchase a motor truck to be stationed in South Gardiner, Me.

Lebanon, Pa., Purchases Pumper—The Union Fire Company of Lebanon, Pa., has purchased a Mack pumper. It is to be delivered in time for the Washington birthday party.

Ft. Dodge Presented With Inhalator—Fort Dodge, Ia., was presented with an inhalator by a local post of the American Legion. The city council has ordered a Seagrave 600-gal. pumper.

Pumper Deliveries Made in Kansas—Oakley, Kans., has received a Boyer pumper on a G. M. C. chassis. Caney and Beloit, Kans., each received a Boyer pumper on a Dodge Brothers' chassis.

Plan Interborough Alarm System—Consideration is being given to a plan whereby the boroughs around Pittsburgh, Pa., would be connected by a fire alarm system so that a mutual aid system could be followed.

Firemen Save Two With Inhalator—Two small children, overcome by smoke at a fire, were saved by means of an inhalator operated by members of the Dubuque, Ia., fire department.

Fireman Injured on Way to Fire—A member of the Pittsburgh, Pa., fire department was seriously injured when he was jostled from a fire truck on the way to the fire. After he fell, the rear part of the apparatus passed over him.

Johnson City, N. Y., Considers Pension—An open meeting has been held in Johnson City, N. Y., so that residents might become better acquainted with the pension plan proposed for members of the fire department.

Houston, Tex., to Erect Fire Station—A new fire station will be erected in Houston, Tex., to house Company No. 24. At present the men are housed in a tent placed on industrial property.

Seattle Apparatus in Crash—Three firemen were injured when a hose car in Seattle, Wash., collided with a street car while answering a fire alarm. The front truck of the street car was thrown off the rails by the impact.

Issues Warning on Christmas Hazards—The National Fire Protection Association has sent a notice to its members calling to their attention the dangers at Christmas time due to holiday decorations and Christmas trees.

Paterson, N. J., Pleased with Aerial—The Ahrens-Fox aerial ladder delivered to Paterson, N. J., was demonstrated before members of the Fire and Police Commission. Chief Thomas L. Coyle is well pleased with the truck.

Additional Funds Allowed for Fire House—New York City has granted additional funds for the construction of a fire house in Dongan Hills, Staten Island. The low bid was $75,694, and the estimated cost $70,000.

Belle Meade, Tenn., Opens Station—A fire hall has been opened in Belle Meade, Tenn., fitted up with modern fire apparatus. The department will be maintained by voluntary contributions.

Mason City Starts Fire Prevention Work—The Retail Merchants Association of Mason City, Ia., has sent a bulletin out to all its members urging that special care be exercised to prevent fires over the holiday season.

Uniontown, Pa., Plans Ambulance Purchase—Three volunteer companies of Uniontown, Pa., are planning to raise money by popular subscription for the purchase of an ambulance. If sufficient money will be raised, it will be equipped with inhalators and other first aid equipment.

Ruling Made on Firemen's Compensation—Volunteer firemen of Stowe Township, Pa., and dependants of those killed while answering a general alarm in Eidelburg, are entitled to compensation, under an opinion of the Workmen's Compensation Board, recently made public. The case dates back to December 26, 1928.

Fire College Planned for Colorado—A committee of the Colorado Firemen's Association is working with one appointed by the Colorado Municipal League to plan for a fire college to be held next year. Elmore Peterson, dean of the Extension Division of the University of Colorado is working with the committees.

Erie, Pa., to Rent Fire Truck—Arrangements have been made by Erie, Pa., to rent a truck for the use of the Erie, Pa., Department to replace a machine wrecked when the department was called out to answer a false alarm. The purchase of new vehicles will be put off until after the December budget sessions.

Springfield, Mass., Has New Fire Station—A new fire station has been completed in Springfield, Mass., for $22,000. The main floor is for the apparatus room, a long room, vestibule, office and work room. On the second floor are an officer's room, a dormitory to house seven men, a locker room, kitchen, bathroom and showers.

Chief R. J. Scott Honored at Dinner—A dinner with entertainment was arranged at the Breakfast Club, Los Angeles, Cal., to honor Chief Ralph J. Scott, head of the fire department and recently elected president of the International Association of Fire Chiefs. There were 250 persons present at the gathering.

Chiefs Meet at Steel Plant—Chiefs met at Bethlehem, Pa., for the ninth annual fire prevention meeting of the subsidiary companies of the Bethlehem Steel Corporation. With the exception of the Pacific Coast and foreign properties, fire chiefs and inspectors from the various plants attended. Discussion on fire prevention and fire protection problems covered a two-day period.

Youngstown Appoints "Free" Firemen—Twelve "free" firemen have been appointed in Youngstown, Ohio. These men will work without pay until January 1 to relieve the acute shortage in man-power in the department. After that time the appointments will be made permanent. The finance director stated that there was no money to pay these men until after January 1. The new budget provides for twelve additional men in the department.

PROPOSED IMPROVEMENTS

Lyndhurst, Cuyahoga Co., Ohio—Fire Chief Frank A. Rothgery advocates the purchase, next year, of a new light hook and ladder truck equipped for rescue work with inhalators and first aid apparatus.

Kent, Portage Co., Ohio—Fire Chief Holly G. Painter recommended the purchase of a hook and ladder truck, according to reports.

Hanford, Kings Co., Calif.—Board of Fire Underwriters recommended the purchase of a triple combination pumper, additional hose and fire alarm boxes, according to reports.

Gardiner, Kennebec Co., Maine.—City Council considering installation of a fire alarm system, according to reports.

Cumberland, Allegany Co., Md.—City planning to vote next spring on a $145,000 bond issue for police and fire headquarters.

Lynn, Essex Co., Mass.—Reports state Lions' Club advocating erection of a central fire station in vicinity of Lynn Common.

Fallon, Churchill Co., Nevada—Fallon Volunteer Fire Department to request City Council for purchase of new piece of apparatus, according to reports.

Marcellus, Onondaga Co., N. Y.—Reports state fire department raising funds for purchase of a quadruple fire truck.

Lawton, Comanche Co., Okla.—Reports state resolution was passed calling for an election to vote on a $71,000 bond issue for construction of new fire station and purchase of equipment.

Lewistown, Mifflin Co., Penn.—Plans have been prepared for erection of the new fire station for the Brooklyn Fire Co. No. 3, according to reports.

Pitman, Gloucester Co., N. J.—The Pitman Fire Patrol is raising funds for erection of new fire station. William R. Pote, is Chairman of Building Committee.

Middleville, Herkimer Co., N. Y.—Reports state bonds will be issued for construction of new fire station.

Plan Association for Alameda County

A meeting was held on November 25 to consider the formation of the Alameda County Firemen's Association to serve a number of California municipalities. Sam Short, retired Chief of the Oakland Fire Department was toastmaster while Chief Al Moir, of Castro Valley, and his fire department acted as hosts. At the turkey dinner that was served, Jay Stevens, Fire Marshal of California, was the principal speaker of the evening.

Following are the new officers elected:

Chief Al Moir, Castro Valley, President; Chief M. Riggs, Hayward, Vice-President; William Graham, Pleasanton, Second Vice-President; Lieut. G. L. Cuff, Berkeley, Secretary, and William Knightly, Commissioner of Hayward, Treasurer.

There are sixteen fire departments in Alameda County and the organizers hope to have all these departments as members. At the initial meeting, the following departments were represented: Alameda, Albany, Berkeley, Piedmont, San Leandro, Hayward, Decoto, Niles, Pleasanton, Castro Valley and Livermore.

Tulsa Adds 31 Men to Fire Force

Thirty-one new firemen were appointed to the fire department of Tulsa, Okla., upon the recommendation of Chief R. E. Pitts to the city commission. The move was also recommended by Mack Shrodes, fire and police commissioner.

All of the men appointed have had some experience in the Tulsa fire department as extra men during the grass seasons or at other times. The construction of three new fire stations made it mandatory to increase the personnel of the department. The appointments were effective at once. No station is to be manned entirely by new men but the new firemen will be distributed through the several stations and will work with the older men of the department.

Eliminating a Parking Evil

In spite of the fact that a city ordinance and police order in Grafton, Ill., prohibit automobiles from parking in front of the fire station which adjoins a garage and opens directly on the street, it has become a daily job to send cars away from the front of the station.

It has been customary to burn a night light above the doors and also inside the fire house, but, as is often the case with small town fire houses, the doors of the station were made solid so that one could not get a view of the apparatus floor.

Recently, large windows were placed in the doors to solve the parking problem. A strong electric light burns inside directly above the apparatus. Any one now driving up to the house can not fail to notice the apparatus inside, and then looks for a more suitable place to park. At any rate, better results have been reported since windows were placed in the otherwise solid doors.

Date Set for Illinois Convention

The forty-third annual convention of the Illinois Firemen's Association will be held in Peoria, Ill., September 9-11, 1930.

All inquiries pertaining to the coming convention should be addressed to Roy W. Alsip, Secretary of Fire Department, Champaign, Ill., while matters concerning exhibits should be referred to Chief Albert Herring, Murphysboro, Ill.

Ahrens-Fox Appoints Western Agent

The W. S. Nott Company of Minneapolis has been appointed sales agent for the Ahrens-Fox Engine Company in the territory comprising the states of Minnesota, Iowa, North Dakota, South Dakota, the eastern half of Nebraska, and the northern part of Wisconsin including counties of LaCrosse, Monroe, Juneau, Adams, Wausau, Winnebago, Calumet and Manitowoc.

CONVENTION DATES

Jan. 18-19, 1930—SOUTHERN CALIFORNIA FIRE CHIEFS' CLUB. 3rd Annual Convention, Avalon, Catalina Island, Cal. Secretary-Treasurer, Chief G. E. Zimmerman, Coronado, Cal.

May 12, week of, 1930—NATIONAL FIRE PROTECTION ASSOCIATION. 34th Annual Meeting, Atlantic City, N. J. 1931 Convention probably to be held in Toronto, Can. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 14, 1930—DEL-MAR-VA. VOLUNTEER FIREMEN'S ASSOCIATION. 1st Annual Convention, Cambridge, Md. Secretary, J. Emory Parks, Cambridge, Md.

May 26-29, 1930—KANSAS STATE ASSOCIATION OF FIRE CHIEFS, STATE FIREMEN'S ASSOCIATION and FIRE SCHOOL. Respectively, 14th, and 43rd Annual Convention and 2nd Annual Fire School, Salina, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan. Secretary Firemen's Short Course Committee, E. J. Stewart, Kansas Insp. Bureau, 701 Jackson St., Topeka, Kan.

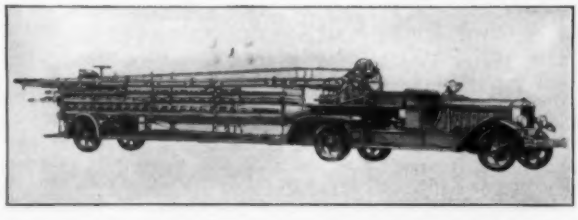
June, 1930—EASTERN ASSOCIATION OF FIRE CHIEFS. 3rd Annual Convention, Baltimore, Md. (Exact date to be decided later.) Secretary, Ex-Chief T. Howell Johnson, Room 602, Chamber of Commerce Bldg., Newark, N. J.

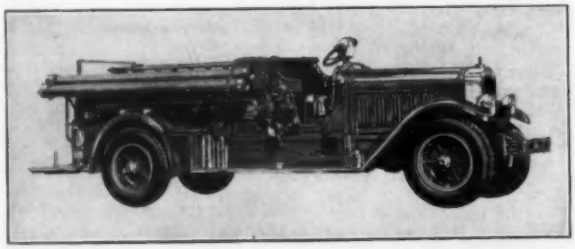
June 2-6, 1930—AMERICAN WATER WORKS ASSOCIATION. 50th Annual Convention, Hotel Jefferson, St. Louis, Mo. Secretary, Beekman C. Little, Rochester, N. Y. Offices of the Association, 29 West 39th Street, New York City.

July 29-31, 1930—INDIANA FIREMEN'S ASSOCIATION. 13th Annual Convention, Lafayette, Ind. Secretary, Clem Smith, Fire Headquarters, Terre Haute, Ind.

Sept. 9-11, 1930—ILLINOIS FIREMEN'S ASSOCIATION. 43rd Annual Convention, Peoria, Ill. Secretary, Assistant Chief Roy W. Aslip, Fire Department, Champaign, Ill. Exhibits, Chief Albert Herring, Fire Department, Murphysboro, Ill.

Sept. 24-25, 1930—MISSOURI STATE FIREMEN'S ASSOCIATION. Annual Convention, Trenton, Mo. Secretary-treasurer, M. J. Mulvoy, St. Louis, 3500 S. Grand Boulevard, St. Louis.





New American-LaFrance Apparatus Exhibited at Birmingham Convention

The two new apparatus shown herewith were those exhibited at the recent convention of the International Association of Fire Chiefs at Birmingham, Ala. The upper illustration shows the new aerial of the company and the lower a new 1,000-gal. pumper.

The Warning Shriek of a Siren!

A Flashing Red Light!

—And Traffic Makes Way for the Fire Department

Down the street rushes the fire department. Traffic must stop—*and it does.* The streets must be cleared—*and they are.* For the Harrington-Seaberg Signal has sounded the warning with its shrill siren blast and flashing red "STOP" light.

Are the congested areas in your city equipped with Harrington-Seaberg Warning Signals? Cities of every size the country over find them incomparable for those quick-action moments that come so unexpectedly.

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Sand-Cast or "Sand-Spun"
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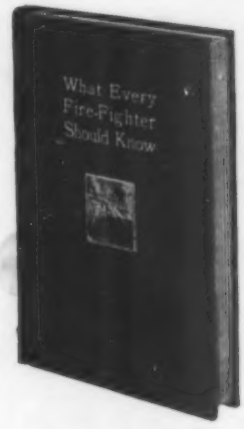

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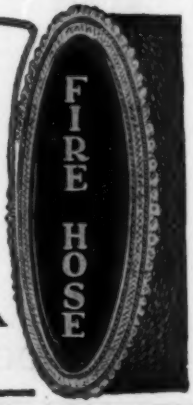

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(Also makers of single and double jacket hose)

OLD BOSTON FIRE RECALLED BY BOX 52 DINNER GUESTS

Assistant Chief Thomas F. Dougherty, One of the Speakers, Elected Honorary Member of the Association—Many Attend

By HARRY F. BELKNAP

THE Box 52 Association held a banquet at the Copley-Plaza Hotel in Boston, Mass., on November 20 to celebrate the 40th anniversary of the Great Thanksgiving Day fire of November 28, 1889, which destroyed fifty-seven buildings in the heart of the downtown mercantile section of Boston. The first alarm for this historic fire was sounded from Box 52 at the corner of Summer and Lincoln Streets at 8:13 A. M.; second alarm at 8:22; third at 8:26, and general alarm at 8:45. Calls for aid were then sent out and thirty-eight municipalities responded with apparatus and men. The "all out" signal was not given until 9:32 A. M. on December 6.

The banquet was attended by Fire Commissioner Eugene C. Hultman, of Boston; Assistant Chief Henry A. Fox, of Boston, who was a hoseman on Engine Company No. 25 at the time of the fire; and by the chiefs of the fire departments of many New England cities and towns adjacent to Boston.

Announcement was made of the election to honorary membership in the association of Assistant Chief Thomas F. Dougherty, of the New York Fire Department. In acknowledging the honor conferred upon him Chief Dougherty made a short speech and gave some statistics on the apparatus and equipment of the New York department.

A feature of the evening was the receipt at the banquet hall by radio of all fire alarms occurring in Boston and a special broadcast by radio telephone from the Boston fire alarm office reporting "There is a good working fire in a store on Wall Street." An alarm had previously been received from Box 1343 at Minot and Wall Streets in the west end section of the city. The radio equipment was installed in the hotel by Ernest E. Reuter, of the association, and tuned to the low wave channel of the fire department.

The speakers of the evening were ex-Fire Commissioner John R. Murphy, who was a member of the Board of Fire Commissioners of Boston at the time of the Thanksgiving Day Fire; and Assistant Chief Henry A. Fox, who gave an interesting account of his experiences at the fire. Lantern slide views were shown of the ruins and of the two fire engines which were crushed by falling walls. Four firemen were killed in the fire.

James G. Farrell, a letter carrier who discovered the fire, was present. Joseph Smith, now of Newton, but formerly of Boston, gave the association the number plate from old Engine 26 which he obtained after the apparatus was wrecked.

The list of departments which responded to the call for aid at the Thanksgiving Day Fire, as compiled by Assistant Chief Fox, was as follows: Beverly, Brockton, Brookline, Cambridge, Chelsea, Danvers, Fall River, Gloucester, Haverhill, Lawrence, Lowell, Lynn, Malden, Hyde Park, Manchester, N. H.; Marblehead, Medford, Melrose, Milford, Nashua, N. H.; New Bedford, Newburyport, Newton, Pawtucket, R. I.; Peabody, Providence, R. I.; Quincy, Randolph, Reading, Salem, Somerville, Springfield, Stoneham, Taunton, Waltham, Winchester, Woburn, and Worcester. The late Chief Webber, of Boston, was in charge.

Speakers' Table of the Box 52 Association Banquet

At head table, from left to right: Assistant Chief Thomas F. Dougherty, of the New York Fire Department; Bartlett Tyler, vice-president, Box 52 Association; Fire Commissioner Eugene C. Hultman, of Boston; P. Hildreth Parker, president of Box 52 Association; Ex-Fire Commissioner John R. Murphy; Assistant Chief Henry A. Fox, of Boston; Police Commissioner Herbert Wilson; Deputy Chief Albert J. Caulfield, of Boston; Chief Selden R. Allen, of Brookline, Mass.; and Chief Frank Charlesworth, of Providence, R. I.

Attendance List

Those who attended were:

Chief William H. Hill, Belmont, Mass.
Battalion Chief Charles F. Dyer, Providence, R. I.
Chief Frank Charlesworth, Providence, R. I.
Police Commissioner Herbert A. Wilson, Boston.
Chief Selden R. Allen, Brookline, Mass.
Deputy Chief Albert J. Caulfield, Boston.
Chief James M. Casey, Cambridge, Mass.
Chief James C. Sullivan, Lowell, Mass.
Chief Thomas A. Qualey, Medford, Mass.
Fire Commissioner Eugene C. Hultman, Boston.
Asst. Chief Thomas F. Dougherty, New York.
Chief R. T. Breagy, Dover, Mass.
Chief Frank E. Tracy, Woburn, Mass.
Chief Michael McPhee, Lawrence, Mass.
Chief David H. DeCourcey, Winchester, Mass.
Asst. Chief Burton Steere, Springfield, Mass.
Chief J. Harry Holmes, Milton, Mass.
Chief Clarence W. Randlett, Newton, Mass.
Capt. D. R. Sullivan, Ladder Co. 2, Cambridge, Mass.
Chief O. O Ordway, Reading, Mass.
Chief Charles H. Fuller, Pawtucket, R. I.
Chief Frank C. Newman, Melrose, Mass.
Ex-Fire Commissioner John R. Murphy, Boston.
Asst. Chief Henry A. Fox, Boston.
Fred J. Boynton, New England Tel. and Tel. Co., Boston.
Howard B. Emery, New England Tel. and Tel. Co., Boston.
Capt. Freeman Bodge, Peabody, Mass.
Capt. Charles J. Lawrence, Peabody, Mass.
Capt. James L. Carr, Peabody, Mass.
John H. Furian, B. F. D., Boston.
William A. Ott, Fire Prevention Bureau, Boston.
Chief J. T. Oliver, Marblehead, Mass.
Chief William C. Mahoney, Peabody, Mass.
Chief Daniel B. Tierney, Arlington, Mass.
Thomas F. McGowan, Engine Co. No. 50, Boston.
Lieut. Michael J. McLoughlin, Engine Co. 50, Boston.
Lieut. Frank G. Eldredge, Providence, R. I.
James A. McCarron, radio operator, B. F. D., Boston.
John A. Devine, aide to Asst. Chief Fox, B. F. D.
Asst. Chief Brown, Marblehead, Mass.
S. N. Cook, Engine Co. 50, Boston.
E. J. Russell, Ladder Co. 9, Boston.
William J. O'Connell, Engine Co. 2, Boston.
Walter Kormann, Ladder Co. 20, Boston.
J. F. Joaquim, B. F. D., Boston.
Patrick Sullivan, Ladder Co. 20, Boston.
S. Broughall, Lexington, Mass.
Capt. Charles Mugridge, Lexington, Mass.
H. Belknap, press representative, N. E. Assn. Fire Chiefs.
Lieut. F. H. Williams, Milton, Mass.
District Chief James Mahoney, Boston.
Capt. Hugh L. Eames, Reading, Mass.
Lieut. Edward F. Doyle, Engine Co. 22, Boston.
Lieut. Thomas M. Nary, Engine Co. 24, Boston.
Lieut. David F. Sheehan, Engine Co. 7, Boston.
George A. Regan, aide to chief, Cambridge, Mass.
George Blomquist, driver for chief, Cambridge, Mass.
Capt. M. Boyle, B. F. D., retired, Boston.
J. J. Connell, fire alarm office, Boston.
William H. Murray, Engine Co. 35, Boston.
Frank J. Geary, aide to chief, Lowell, Mass.
George L. Fickett, Supt. of Fire Alarms, Boston.
Deputy Supt. Thomas F. Goode, Police Dept., Boston.
George W. Woodworth, Boston.
Lieut. Timothy F. McCarthy, Cambridge, Mass.
N. Edward Power, Cambridge Mass., fire alarm office.
William T. Bull, Newport, R. I., callman Engine Co. 4.
Deputy Chief Albert R. Wait, Cambridge, Mass.
M. J. O'Donnell, Ladder Co. 7, Boston.
Lieut. John J. Devine, Engine Co. 19, Boston.
Asst. Chief A. C. Maxwell, Reading, Mass.
Charles E. Turner, Boston, pensioned call man.

Lieut. Wells, Weymouth, Mass.
Harold C. Turner, Box 52 Association, Boston.
J. H. Blanchard, Box 52 Association, Boston.
Benjamin H. Bodge, Peabody, Mass.
L. S. King, Box 52 Association, Boston.
Joseph Smith, Boston.
John J. Scully, American Fire Equipment Co., Boston.
Hubert W. Tracy, Boston.
Charles G. Curtaz, Box 52 Association, Boston.
Albert W. Daniels, Box 52 Association, Boston.
William P. Lehman, Box 52 Association, Winthrop, Mass.
Leslie Watson, Boston.
John Burns, Jr., Boston.
Ernest L. Rueter, Newton, Mass., Box 52 Association.
Frederick Blake, Boston, Box 52 Association.
George L. Duncan, Cambridge, Mass., Box 52 Association.
Walter T. Hannigan, Boston, Box 52 Association.
Lester H. Standley, Boston.
George F. Cobb, traffic manager, N. E. Assn. Fire Chiefs.
Roy Langill Boston.
William H. Crary, Boston.
James McDevitt, Lexington, Mass.
Frank H. Rowland, Jr., Arlington, Mass.
Howard K. Spaulding, Peabody, Mass., Box 52 Association.
William E. Dolan, Boston, Box 52 Association.
Theodore E. Grant, Norwood, Mass., Box 52 Association.
Herbert K. Pratt, Bridgewater, Mass., Box 52 Association.
William S. Phillips, Boston, Box 52 Association.
L. J. Phillips, Boston.
Francis J. Daley, Somerville, Mass.
P. Hildreth Parker, Belmont, Mass., president, Box 52 Association.
Guy R. Merrill, Cambridge, Mass., Box 52 Association.
George Y. Berry, Boston, Box 52 Association.
L. F. Berry, Boston.
Fred W. Tucker, Boston.
George M. Hynes, Boston.
Norman H. Kerr, Boston.
Donald H. Kerr, Boston, Box 52 Association.
F. W. Kurth, Boston.
Robert V. Hoch, Boston.
R. Wallace Fay, Winchester, Mass.
Robert E. Fay, Boston, Box 52 Association.
Charles J. Breslin, Boston, Box 52 Association.
J. E. Breslin, Jr., Watertown, Mass., Box 52 Association.
O. M. Peirce, Jr., Belmont, Mass.
Bartlett Tyler, Belmont, Mass., vice-president, Box 52 Association.
George C. Ambrose, Boston, Box 52 Association.
Frank Northrop, Boston, A. P. Smith Mfg. Co.
J. C. Nute, Jr., Boston.
George W. Austin, Boston, Box 52 Association.
G. Merton Austin, Boston.
Floyd L. Keller, Adjutant, Salvation Army, Boston.
Howard P. Dunham, Boston.
Nelson W. Kimball, Boston.
Robert W. Little, Boston.
James G. Moulton, Boston, Box 52 Association.
John P. Marshall, Boston, Box 52 Association.
Everett L. Turner, Boston, Box 52 Association.
Arthur M. Wall, Boston, Box 52 Association.
Charles M. Wetherell, Cambridge, Mass., Box 52 Association.
W. B. Corcoran, Belmont, Mass.
Raymond B. Hemenway, Newton, Mass., Box 52 Association
Nelson Whitney, Natick, Mass., Box 52 Association.
Chief John T. Nicolls, Malden, Mass.
Deputy Chief Arthur E. Miller, Malden, Mass.
Capt. M. F. Turner, Newton, Mass.
Lieut. F. A. Perkins, Engine Co. 3, Newton, Mass.

The Round Table

(*Continued from page* 1134)

The use of Christmas trees, treated with any preparation that might serve to create a fire hazard, is strictly prohibited.

Henry J. Hyatt, Chief, Fitchburg, Mass.: We do make a special inspection before Christmas. I think it is the most important time of the year for a thorough inspection. At that particular time stores are carrying a very large stock of material. So much merchandise is being unpacked that a large amount of rubbish collects.

During the Christmas shopping season and the week following, we have the mercantile districts thoroughly inspected. We also keep a close watch on window trimmings to avoid any hazard from poor wiring or inflammable decorations.

Our merchants cooperate with us very nicely with regard to the rubbish question.

Geo. Van Zant, Chief, New Castle, Ind.: In my estimation the greatest fire hazard to be found in the business houses around Christmas is the accumulation of rubbish in basements and shipping rooms. At this season merchants are devoting all their time and effort toward seeing that merchandise is being displayed effectively. I allow them time to unpack all their stocks and then I have inspections made and "bear down" on them regarding the disposal of rubbish more so than at any other time.

R. S. Baughan, Chief, Norfolk, Va.: This city makes inspections semi-monthly and as often again as necessary. During the Christmas season more inspections are made in order to see that all packing material, discarded boxes, etc., are disposed of as soon as possible. We also have laws covering the display of toy motion picture machines using films. Due to the fact that this city prohibits the storage, display and sale of fireworks, we have very few fires occurring during the holidays.

J. Russell, Chief, Fond du Lac, Wis.: We make daily inspections of all stores during the holiday season, viz,, starting December 1st. When the stores remain open in the evening, we make another inspection before closing time. Therefore, during this period, two inspections are made every day.

Owen C. Dunn, Chief, St. Paul, Minn.: Firemen inspect all retail stores at least once every day for ten days preceding Christmas. Particular attention is given to the decorations, the shipping room, pyroxylin plastics, and toy motion picture machines.

W. H. Heydenreich, Chief, Parkersburg, W. Va.: Yes, we do make particular effort by inspection, etc., to prevent fire in stores during the Christmas shopping season.

When extra wiring is used for decorative purposes, we have this wiring inspected in order to ascertain that it is not hung over nails, etc. This is done to prevent short circuits.

Special effort is made that good housekeeping is observed at this time as rubbish accumulates very quickly during the rush season. When combustible material is used for decorations in windows, etc., inspection is made to see that this material is not hung near lights.

We assign as many men as possible to this inspection work.

Ed. Mead, Chief, Hastings, Nebr.: We make a special effort during the Christmas holiday season to see that lights are kept away from inflammable materials. I personally inspect all stores where things look particularly bad.

N. Belfy, Chief, Muskegon, Mich.: Yes, we have daily inspections made of all mercantile establishments during the holiday season. Special care should be taken to see that rubbish accumulations are cleaned up every night. All excelsior and other inflammable materials should be removed from basements. No inflammable window trimmings or decorations should be allowed over electric lights.

Ed. Hamm, Chief, Winfield, Kans.: Yes, we make special inspections during the Christmas season and also have warnings regarding causes of fire, printed in the newspapers. This method has obtained very good results.

Wm. Feldwich, Chief, Alton, Ill.: I make particular inspections at all times. During the Christmas season we take particular notice of wiring, window displays and decorations.

Fred. W. Collard, Chief, Dover, N. J.: Yes, a particular inspection effort is made during the Christmas shopping season to prevent fires. The Fire Prevention Committee make inspections and see that all hazards are removed.

Chas. H. Fuller, Chief, Pawtucket, R. I.: Although we inspect stores all the year around, we make special inspections before and during the Christmas holidays. Care is taken to see that inflammable materials, flimsy decorations, etc., are not permitted to lay around.

Geo. Layton, Chief, Savannah, Ill.: We make special inspections during the holiday shopping season to see that all combustible material is eliminated and that the wiring throughout the stores is one hundred per cent.

W. B. Cody, Chief, Atlanta, Ga. (died recently): Yes, special inspections are carried on during the holiday season. One precaution which, to my mind, is important is to be sure that only good inspectors are kept on the job at all times.

Roy Pitts, Chief, Independence, Kans.: We make inspections weekly of all business houses during the month of December in order to be sure that electric wiring, rubbish, stocks, etc., are properly taken care of. Electric wires, bulbs, open stoves and gas lights should be given special attention. Also, it should be required that all rubbish is removed twice daily.

Red Bank, N. J., to Open Fire House—A new fire house will be opened in Red Bank, N. J.

Fire Escape Gives Way and Injures Firemen—A Worcester, Mass., hoseman suffered from a fractured leg when a rusty step on a fire escape gave way at a five-story building fire. The blaze started on the third floor and extended to the fourth and fifth floors.

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The quality of Pirsch fire fighting equipment is assured by more than seventy years of manufacturing experience. The Pirsch line is complete, chemical engines, ladder trucks, pumpers and Pirsch trussed fire ladders. Write.

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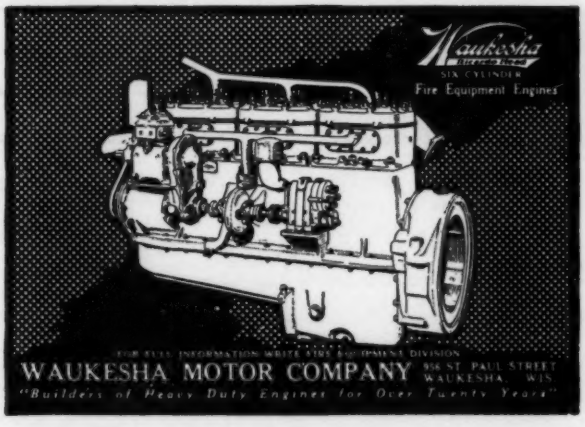

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Write for descriptive matter showing sirens that have never lost in competition.

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SAN JOSE - - - CALIFORNIA

Saves time - *and costly hose*

No. 1. (Capacity 3 to 7 tons; weight, each, 72 lbs.)

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Complete information and Prices on request.

It's often necessary to move apparatus at a fire. Automobile traffic hates to be held up by a line of hose stretched across the right of way.

Why ruin your hose by driving over it? Or waste valuable time cutting off and disconnecting?

The Wausau Protector is a big time and money saver—easy to handle and carry. Order a set today, or write us for particulars

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Invincible and Callahan Nozzles

Fire Department Supplies

are in use throughout the country and giving unsurpassed service.

Every fire official should be fully acquainted with Morse equipment and have our catalog and other descriptive literature on file for ready reference whenever considering the purchase of new equipment.

You will find that it pays.

Write for Catalog

Andrew J. Morse & Son, Inc.

221 High St. Established 1837 Boston, Mass.

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The **Corey** Fire Hydrants as built by us are the only **Genuine Corey Fire Hydrants** manufactured, and they conform to the standard specifications of the American Water Works Association.

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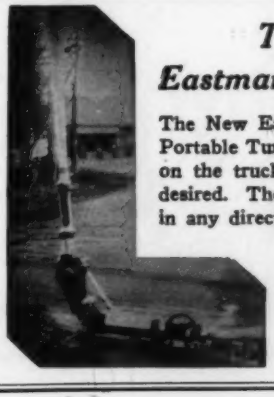
TROY, N. Y.



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Samuel Eastman Co.

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EDDY Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

Write for the Facts

EDDY VALVE CO.

Waterford, N. Y.

James B. Clow & Sons, Chicago Agents

FALSE ALARMS

THEY KNEW

Some persons do funny things because of a fire. There is the case of one who saw smoke issuing from the second floor of an apartment house. He forgot all about the necessity of looking for a fire alarm box. All up and down the street he ran, until he saw a typical street urchin.

"Can you tell me where I can find a policeman?"

"Sure, mister. There's a speakeasy right across the street."

A sweet disposition and even temper are fine, but popcorn doesn't amount to anything until it gets hot.

THOROUGHLY VERSED

Because of neglect and a thorough appreciation of his duty, Gibbs failed to consider his personal self, and after wallowing about in a water-filled cellar, he was laid up for some time. He called on a doctor in the neighborhood.

"Do you really think you can make me well again?"

"Without a doubt," replied the doctor. "I've treated a patient for over twenty years who has exactly the same ailment."

A man in court recently said that he never knew what happiness meant until he got married. Then, of course, it was too late.

SPITE WORK

Next door to the fire house lived a mighty attractive girl. A member of the company fell in love with her and she, of course, cared for him. But the girl's mother thought the daughter deserved a more talented mate. So the young persons eloped.

The story was being told at a dinner table, as all good tales are.

"And her mother—has she forgiven them?" asked one.

"I don't think so. She's gone to live with them."

It's too bad that it isn't warm enough to go swimming in the winter while the beaches are not crowded.

HIGH FINANCE

Up at the firemen's hall, the boys had a habit of tilting their chairs back and bracing their feet on the nearest piece of furniture as they watched a pool game. One of the fire commissioners protested against the undignified posture of the members.

"Aw, give the janitor a break, Commissioner," remarked one, "after the boys are gone he generally picks up a little change that falls out of their pockets on the chair or floor."

PROPERLY DELIVERED

The phone rang just as the captain was leaving his office. He shouted back to a fireman, "Take the message and give it to me when I come back."

When the captain returned, the under-dog was waiting for him. As soon as the officer had hung up his hat and coat, he came over and gave the captain a resounding kiss.

"Why you big Turk, what's the idea?"

"That was your little daughter on the phone, sir," was the brief explanation.

Modern ending—And so they were married and lived happily for many many payments.

FOOLED THE CHIEF

Some men seem to rebel at official authority. For example, there was Mike. When the fire was under control, Mike, who believed that he did more than his proportionate share in putting out the blaze, decided to ease up. But one of the townsfolk noticed that every time he saw Mike, he also noticed the fireman with a roll of hose.

"Gee, Mike, you work hard. How many lengths of hose have you rolled up so far?"

"Hush, man. I'm fooling the chief. I've carried around this roll since he gave the orders to pick up."

Another thing that goes in like a lion and comes out like a lamb is a civilian calling on the fire chief to tell him how inefficient his department is.

LOOKING AHEAD

The doctor as he came out of the room was anxious to announce, "It's a boy."

"Percival Archibald Murphy," murmured the father in a daze.

"What an odd name for a fire fighter," remarked the doctor.

"No, doctor, one fire-fighter in a family is enough. He's going to be a plain fighter—I'm looking ahead."

"I don't see the connection."

"No? Think of all the practice he'll get when he goes to school with that name."

Another conception of an easy job: Garbage collector in Scotland.

SELF-MADE MAN

Down stairs in the fire hall, there was not a person to be seen. Upstairs there were a good many gathered about a card table. The game had just ended.

One man who pushed back his chair remarked, "Well, anyhow, I won't have to tell my wife about the money I lost."

"What'll you do?" they all asked.

"Nothing. I ain't married."

A friend tells us he is a bachelor because by the time he gets a girl to where she might say yes, he is so broke he has to say no.

THERE'S A REASON

When Dick came out of the hospital and reported for work for the first time since the warehouse fire, there were many eager to hear his experiences.

"When I was in the hospital," Dick narrated, "they had to blindfold me to keep my pulse down."

"Never heard of that before," said one.

"Maybe you've never had a pretty nurse take your pulse."

Humpty Dumpty sat in a class
Humphy Dumpty failed to pass.
All the chief's horses
And all the chief's men
Couldn't make Humpty Dumpty take
Hydraulics again.

ENVIRONMENT

The members of the truck company were mighty proud of the dog that they considered their mascot. There was even talk of entering it in the coming local dog show. The men were discussing such a move.

"Whatsa matter with you? That hound will never win a prize at the dog show."

"Maybe not," said the man who suggested the plan, "but think of the fine society that he'll be in."

Drawing by "Art" Espey

To Wish All Our Readers a Merry Christmas

Your Catalog Page

Fire Protection Equipment and Supplies

1 Acid Siphons.
2 Adaptors for Changing Hydrant Threads.
3 Acid Jars and Rings.
4 Aerial Ladders, Detachable.
5 Aerial Trucks.
6 Alarms, Siren, Electric.
7 Alarm Systems, Industrial.
8 Alarm Systems, Municipal Telegraphic.
9 Alarms, Thermostatic.
10 Asbestos Clothing.
11 Badges, Insignias, Buttons, etc.
12 Banners, Trumpets, etc.
13 Battery Jars.
14 Battery Zincs for Fire Alarm Batteries.
15 Bells, Fire Alarm, Municipal
16 Body Equipments.
17 Boxes, Gongs, Reels, Registers, Fire Alarm.
18 Brakes, Air.
19 Brake Linings.
20 Brooms, Fire.
21 Building Materials, Fire Retardant.
22 Caps, Firemen's.
23 Chains, Non-Skid Fire Apparatus.
24 Chassis for Fire Apparatus.
25 Chemical Engines and Tanks.
26 Chimney Cleaning Compounds.
27 City Service Trucks.
28 Coats & Suits, Firemen's Quick Hitch.
29 Combination Chemical & Hose Cars.
30 Cutting & Welding Equimpent Blow Torch.
31 Cutting & Welding Equipment, Electric.
32 Deluge Sets.
33 Door Openers, Fire Station, Automatic.
34 Extinguishers, Calcium Chloride.
35 Extinguishers, Carbon Dioxide.
36 Extinguishers, Soda-Acid.
37 Extinguishers, Carbon Tetrachloride.
38 Extinguishers, Foam.
39 Extinguishers, Powder.
40 Fire Boat Nozzle Equipment.
41 Fire Department Supplies, General.
42 Fire Exit Devices, Door Opening.
43 Fire Alarm Posts.
44 Fire Escapes, Portable.
45 Fire Escapes, Rigid.
46 First Aid Equipment.
47 Flare Lights.
48 Flashlights, Hand.
49 Foam Liquid for Extinguishers.
50 Gas Masks and Respirators.
51 Gas & Smoke Helmets.
52 Gasoline & Oil Handling Equipment.
53 Goggles, Firmen's.
54 Helmets, Metal, etc.

Help Yourself

Whenever you are in the market for new equipment you naturally want to get complete information from all reliable manufacturers before you place the orders for your department.

This page is a feature of every issue to make it convenient for you to get all this information without cost to you and without placing you under any obligation whatever to buy from any particular manufacturer.

You only have to run down the list of equipment and mail in the coupon below with your name and address and the numbers that indicate what you are interested in and we will then have the leading manufacturers of this equipment send you complete information direct—so why not let us help you get what you want? We are glad to be of service. Help yourself.

Fire Protection Equipment and Supplies

55 Hose Carts, Reels & Racks.
56 Hose Clamps.
57 Hose, Fire.
58 Hose, Chemical.
59 Hose Holders.
60 Hose Jackets.
61 Hose Standardization Tools.
62 Hydrant Draining Pumps.
63 Hydrants, Fire.
64 Jacks for Fire Trucks.
65 Jacks, Shoring & Prying.
66 Ladders, Fire.
67 Lightning Arresters.
68 Motorcycles, Fire Dept. Equipped.
69 Nets, Life.
70 Nozzles, Pipes & Misc. Brass Goods.
71 Packings, Pumps.
72 Pads, Pole Hole.
73 Paints, Fire Resisting.
74 Priming Ether, Motor.
75 Pumping Cars, Standard.
76 Pumping Cars, Foam.
77 Pumps, Fire Apparatus.
78 Pumps, Fire Service, Stationary.
79 Pumps, Portable for Fire Protection.
80 Record Books, Fire.
81 Relief Valves.
82 Reviving Apparatus, Oxygen.
83 Rubber Clothing.
84 Searchlights.
85 Shingles, Fire Retardant.
86 Shirts, Firemen's Special.
87 Sirens, Apparatus & Chiefs' Cars.
88 Sliding Poles.
89 Soda & Acid Chemicals.
90 Spark Plugs, Fire Apparatus & Motorcyles.
91 Squad and other Auxiliary Cars.
92 Sprinkler Head Shut-Offs.
93 Sprinkler Supervisory Service.
94 Sprinkler Systems, Automatic, Foam.
95 Sprinkler Systems, Automatic, Water.
96 Starters, Fire Apparatus, Automatic, Air.
97 Steam Fire Engines.
98 Tarpaulins & Fire Blankets.
99 Tetrachloride Chemicals.
100 Thawing Equipment, Hydrant.
101 Tires, Fire Apparatus, Pneumatic, Solid, Cushion and Non-Skid.
102 Tractors.
103 Traffic Clearing Systems.
104 Triple Combination Pumping Cars.
105 Uniforms.
106 Water Towers.
107 Wheels, Cushion.
108 Whistles, Fire Alarm, Compressed Air
109 Whistles, Fire Alarm, Steam.
110 Whistles, Fire Apparatus.
111 Wrecking Trucks.

TEAR OFF HERE

FIRE ENGINEERING, 225 West 34th St., New York City.
As a fire protection official I should like to have descriptive literature and complete information mailed to me, without cost or obligation, on the equipment indicated by the following numbers:

Date.....

Nos. .....

Nos. .....

Nos. .....

Nos. .....

Name .....

Position .....

Street .....

City and State.....

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet

12-11

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Built to

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Any size hard suction

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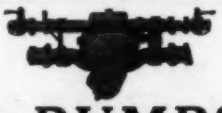

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is for Fire Protection Officials

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Buffalo Pumpers are the most highly developed in design, construction and engineering standards and are intended for municipality, community and township fire protection.

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MADE TO FIT THE NEW MODEL FORD

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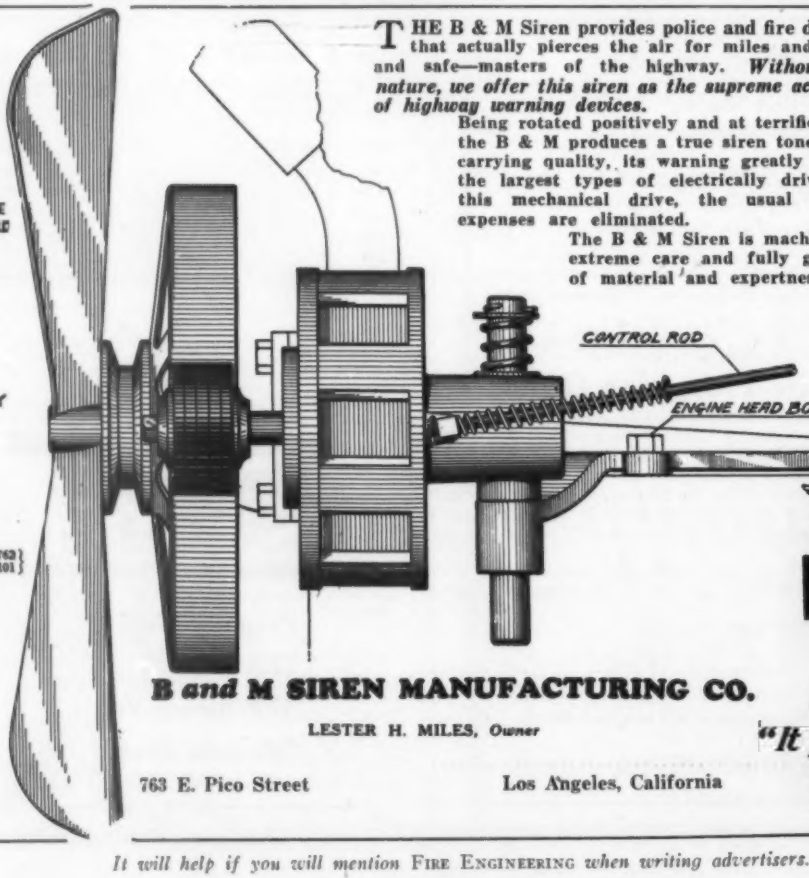

THE B & M Siren provides police and fire departments with a voice that actually pierces the air for miles and makes them absolute—and safe—masters of the highway. ***Without a reservation of any nature, we offer this siren as the supreme achievement in the design of highway warning devices.***

Being rotated positively and at terrific speed by engine power, the B & M produces a true siren tone of extreme volume and carrying quality, its warning greatly surpassing that of even the largest types of electrically driven signals. Because of this mechanical drive, the usual battery annoyance and expenses are eliminated.

The B & M Siren is machined and assembled with extreme care and fully guaranteed as to quality of material and expertness of workmanship.

Control is effected through foot or hand levers optionally, or both. Specifications for fire apparatus, etc., are carefully considered in the manufacture of these signals.

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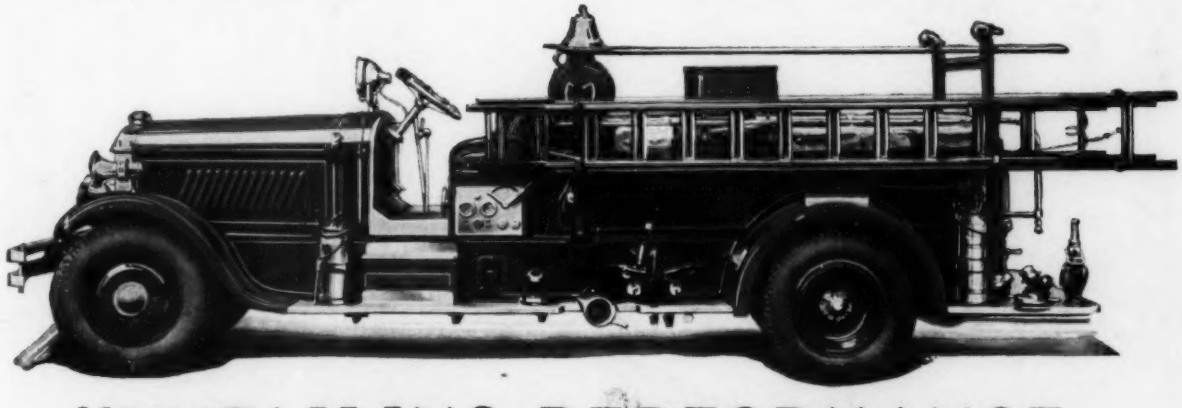
"It pierces the air"

Mack

FIRE APPARATUS

Mack Type Nineteen 1000 gallon pressure volume centrifugal pumper with Mack Fire Department Engine recently delivered to the Auburn, N. Y., Fire Department.



"UNFAILING PERFORMANCE . . IN FREEZING WEATHER"

AT this time of year the above reason is often given for preference for Mack Fire Apparatus.

Pioneer developments of Mack Progressive Fire Engineering account for the superb performance which Mack Fire Apparatus delivers under the most adverse climatic conditions—progressive fire engineering backed by long experience, vast resources, and extensive engineering knowledge, plus highest quality standards.

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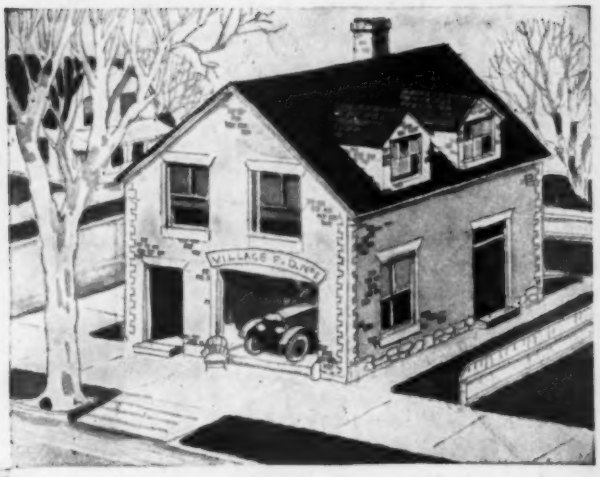

suitable for every engine house

FIRE fighters know the vast importance of fireproof roofs. If it were only for the example set, every engine house should have a fireproof roof.

Johns-Manville, the pioneer in the development of asbestos roofing materials, can provide suitable fireproof roofs for any engine house. For the detached, pitched-roof house in smaller cities and towns, Johns-Manville Asbestos Shingles make an everlasting roof as good-looking as it is safe.

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